

BONUS FREE POSTER INSIDE! **OFF-ROAD WORLDS**

SEE IT FIRST!
p. 124

RADIO CONTROL *car action*

50
ESSENTIAL
TIPS

**EASY TRICKS & TIME
SAVING TECHNIQUES**

FAST FERRARI
Tamiya's Mid-motor
Machine

**BRUSHLESS
BATTLE**

Novak
vs. LRP

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- » SMOOTH OUT YOUR SHOCKS
- » BUILD A BETTER BATTERY PACK
- » GLUE TIRES THAT STAY STUCK
- » INCREASE YOUR FUEL CAPACITY

**SPY
SHOTS**

The truck Losi doesn't
want you to see (yet) p. 39

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NOVEMBER 2005

11>

RADIO CONTROL car action

VOLUME 20 ■ NUMBER 11 ■ NOVEMBER 2005

C O N T E N T S

FEATURES

71 50+ GREAT RC TIPS

Everybody loves a good stock tip. Wait, these are RC tips? Well, that makes much more sense.

>> BY THE RC CAR ACTION TEAM

124 IFMAR OFF-ROAD WORLDS

12 packed pages of 2WD and 4WD action from Collegno, Italy. Ci non chieda come abbiamo entrato i nostri asini grassi in un Fiat Punto.

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Before they went to the Worlds, America's best duked it out in Connecticut.

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Who does brushless best? We test both systems on the track to see how orange compares with blue.

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Tear 'em down and smooth 'em out!

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More fuel, more run time. It isn't rocket science.

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Ready to solder up a set of side-by-side cells? We show you how.

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... as in, "Not to your thumb or workbench."

>> BY PETER VIEIRA



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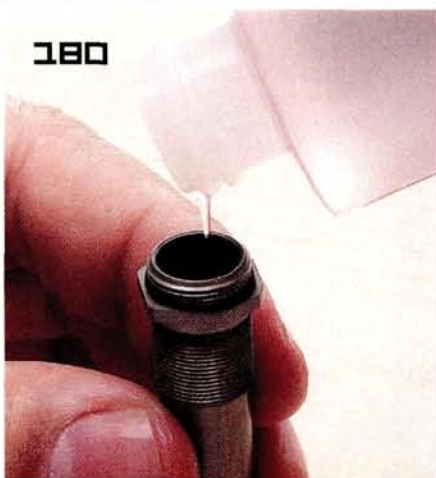
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Tamiya goes mid-motor with an all-new dual-belt design and prancing-horse bodywork.

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It may be a model below the full-race XB8, but XRAY's "budget" buggy is still track-ready.

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Big! Fast! Goes backwards! OFNA's 1/7-scale street machine is like nothing else on the road.

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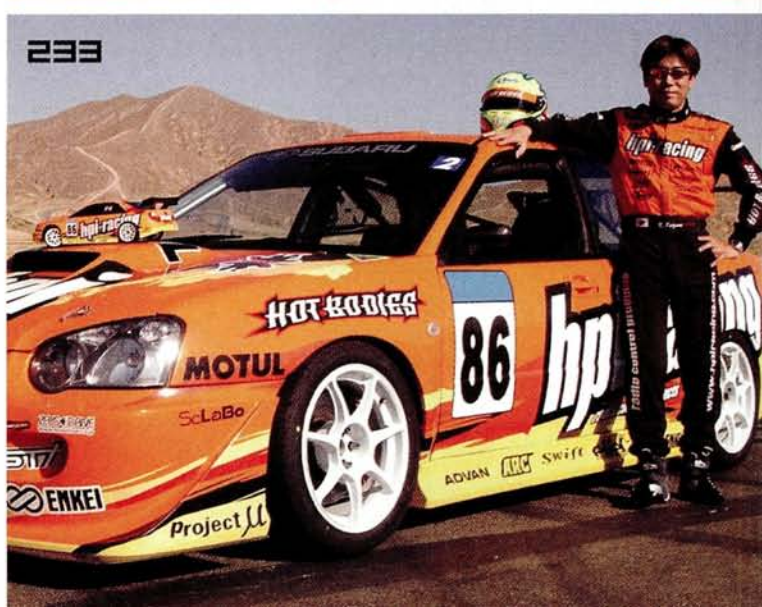
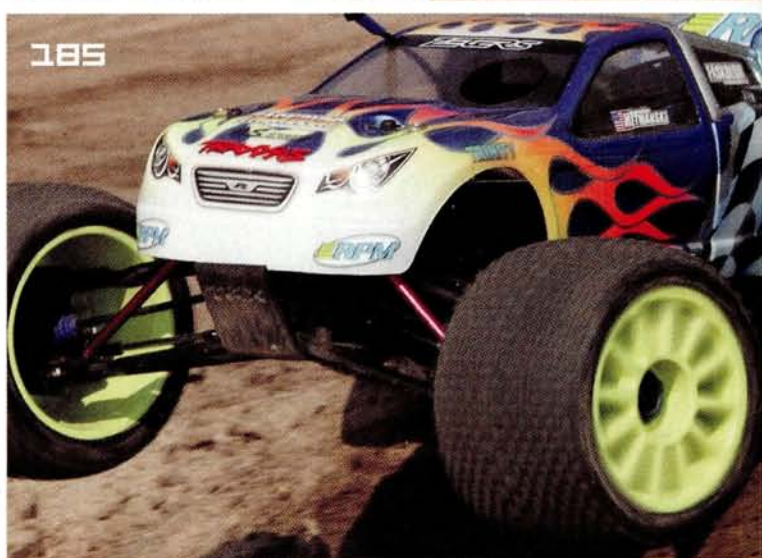
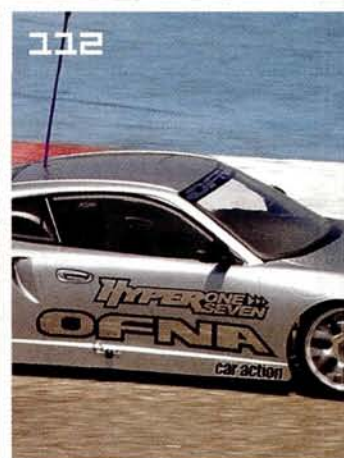
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We Want Your Homebuilts!

We build a lot of "project" vehicles at *RC Car Action*, and they're usually full of bolt-on stuff everyone can add to their cars or trucks. They're fun to build and nice to look at, and hopefully, they turn you on



Ryan Gerrish of Salem, Oregon, built this beauty. What are you working on?

to a few widgets for your wish list. But "project" cars aren't nearly as much fun as true customs, which we do less frequently (they're a lot of work!) but are so much more interesting. You know who's really good at 'em? You guys! Nothing tops a vehicle built with the attention to detail and single-minded focus of one dedicated RC junkie who just had to have a dual-4-stroke desert truck or drag-rail mudbogger or tube-frame desert buggy. Done right, the completed car/truck/thing is just plain cool, but it isn't just about the polished this or hand-machined that. A genuine custom car (RC or full size) is more than a collection of parts; it's a three-dimensional projection of the builder's personality

and passion for cars, trucks or the particular thing with wheels on which so much attention has been lavished. While not as obviously soul-revealing as a sculpture, painting or poem, the builder is indeed an artist, and the work is no less valid than anything on canvas. And a lot more fun to drive. So, what kind of masterpiece are you working on? Get those pics into "Readers Rides," and we just might select your ride for a "Homebuilt" feature in *RC Car Action*!

In This Issue

IFMAR OFF-ROAD WORLD CHAMPS

Straight from Italy, all the action at RC's premier off-road event. Who is the best of the best? Which gear did they use to win? It's all inside.

NOVAK VS. LRP: WHO DOES BRUSHLESS BEST?

Now that LRP and Novak both have brushed/brushless speed-control and motor combos, we decided it was high time for an orange-vs.-blue shootout. Size, weight, price, performance ... we measure, drive and compare.

MORE HOW-TO'S

We've loaded up on how-to essentials this month: tire gluing, shock tuning and battery building all get the step-by-step treatment. It's must-know stuff for new builders, but you experienced guys might learn a thing or two as well.

Peter Vieira

Peter Vieira
Executive Editor

RC Dirt!

Can't get enough off-road action? Then keep your eyes peeled for *RC Dirt!* Our latest special issue is exclusively off-road and all about power and performance. From the 4WD buggy shootout and a buggy-vs-truggy-vs-monster truck nitro showdown to

the comprehensive tire guide and off-road-only How To's, it's packed! Look for it on news-stands on October 18.



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Truggies Again

I hate to tell you this, but truggies such as the SportWerks Mayhem ST are nothing new. Remember the Kyosho Nitro USA-1 way back in the early '90s? It was a truggy. Kyosho also had the Inferno ST, and Mugen had a buggy-based truck, too; and OFNA's Pirate series could all be called truggies. Not new at all. [email]

Roger

Well duh, Rog, we all know truckified buggies are nothing new. But the modern generation of truggies (Mayhem ST included) are much more advanced than those old machines you mention. The primary innovation is performance-engineered suspension designed for monster-size tires; it gives vastly improved performance over short-arm trucks with extended axles or mega-offset wheels. And that's what makes truggies a "new" category.

—Pete

Red-Line Fever

I saw the "Inside Scoop" about the Vantage roll cage and suspension arms for the Savage. First, I must say they are really impressive! But who makes those sweet tires and rims on that Savage? They are really cool! [email]
Brandon Tunquist
Mentor, OH



Just Drive

I have an RC10T3 RTR. Yes, I know it's old, but hey, it works. Right now, it still has all of its stock parts because I've spent most of my time with my nitro vehicles. What should I do to it to help me compete with other racers at the track: new motor, ESC, batteries, graphite, wheels, etc.? Please help me! [email]

Spencer

Top five track-performance enhancers:

1. Track time.
2. More track time.
3. Tires as grippy as everybody else's.
4. A motor as fast as everybody else's.
5. A battery that can run that motor for 5 minutes.

—Pete

Not Best, Just New

Hey guys, I've been reading your mag for more than 11 years now, and it is still the best thing since sliced bread! Great work! I'm curious why you left out Losi's JRX-S in the four best Super Sedans? (September 2005) Personally, I'm a TC3 guy, but after seeing how advanced belt-driven cars are becoming, I'm swaying toward the belt wagon. So, is there any info I could use to make my decision, other than the last review several months ago? [email]

Rudy Diaz

Despite what the coverline said, the article didn't claim they were the *best* sedans—just the latest. The JRX-S already had a full review and wasn't as new as the XRAY, Tamiya, Yokomo and Corally cars we featured. As for what to buy, just go with what's popular at your track and is well supported with parts in the shop. All the pro cars are so close in performance that you could win with any of them.

—Pete

Time Out

First of all, awesome mag; I'm fairly new to RC and bought a Losi Triple-XT electric stadium truck as my first victim. I bought a Reedy 19T Spec for it, and the

truck flies. While I was motor shopping, I noticed that a lot of the mod motors have adjustable timing. What is adjustable timing, and how does it work? I am quite confused. Keep up the great work! [email]

Sands Anderson

"Timing" refers to the position of the motor's brushes relative to the magnets. It can be adjusted by rotating the endbell. If you rotate the endbell counter-clockwise, you will advance the timing for greater rpm (translation: you go faster). That's the short version; for the full story, have a look at "How To: Adjust Mod Motor Timing" in the January 2004 issue.

YOU SAID IT

"I got into RC so I could use my head"

I first want to compliment you on this great magazine. It has taught me everything I know about RC. I was reading "Piston Power" in the August 2005 issue, and I got really hyped up about telemetry. I first thought that sensors and servos changing the configuration of the car could be really great. Then I thought using this RC wouldn't require much thinking at all. I got into RC so I could use my head and learn how to do things on my own. I think transferring information to a laptop is a very good idea, but sensors and servos doing it for you isn't fun. If this does happen, we would lose a lot of the RC car whizzes in the hobby. Keep up the great magazine. I look forward to it every month. [email]

Cameron O'Brien, 13 years old

Interesting take, especially from a 13-year-old. [A quick aside: it's cool for kids to tell how old they are, but what's up with you guys who write us and say, "Hi, I'm 34 years old ..."?] Anyway, Cam, you have a prize coming. This month, it's a Team Orion Revolution mod motor. Score!

—Pete ■



Vantage makes 'em! The HX3s (that's what they're called) do look pretty sweet, but there's more to the red-line concept than cool-factor. The red center tread makes it easy to see the way the tires steer and deflect as you drive, so you have better control and can better visualize how your setup is working.

—Pete

**WE WANT TO
HEAR
FROM
YOU!**



Email us at readerswrite@airage.com, or put the postman to work by mailing your letter to Readers Write, 100 East Ridge, Ridgefield CT 06877-4606 USA. Please include your city and state, and let us know if we may publish your email address. We can't reply to every letter and email, but we read 'em all!



TEAM LOSI "mini LST"?



- » Body looks LST-like. Ignore the test-mule quickie paint job!
- » LST-style multi-plate chassis
- » Tires are reported to be about 3 inches in diameter, so the truck should be larger than other minis.
- » Chrome wheels ... same style as LST. Hard to tell with the blur, but the tires look similar.
- » The mini appears to have one shock per wheel. Likely oil-filled.

SPOTTED AT REVELATION RACEWAY:

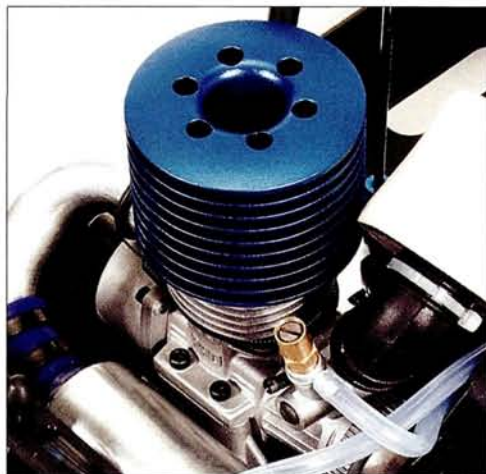
The Mini LST? Well, we're guessing that's what Team Losi will call this mini-truck, since it sure looks like a shrunken LST to us. Jason Sams took the snaps when he showed up early at Revelation and caught the Team Losi guys testing the mystery truck (which is electric, by the way). Jason says the truck looked faster than other mini-trucks he has seen in action (which is basically all of them) and was well-planted on the track. "I'm sure it had oil shocks," says Jay. He also notes that the truck is larger than a Mini-T and that its tires seemed to be similar in diameter to a $\frac{1}{10}$ buggy's. Pour over the pics for now; once Losi starts talking, we'll give you more info.



Team Associated Monster GT 4.60 SE

Everybody wants more power, and Associated is ready to deliver with a new version of the Monster GT. As you might guess from its name, the 4.60 SE replaces the stock MGT's .21 powerplant with a new 4.6cc (.28ci) mill. And since extra power means more wear and tear, Associated also up-spec'd the tranny with a full set of steel gears and fortified the drivetrain with steel CV axles built for big torque loads. Look for a review in *RC Car Action* soon!

Team Associated, (714) 850-9342; teamassociated.com; rc10.com.



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>>> PIT BOX



HPI Racing 17mm Hex Hub conversion set for Savage

HPI's strong steel axles and lightweight machined-aluminum hubs and wheel nuts increase strength and trim weight, and they look custom with their purple-anod treatment. The set includes everything you need to upgrade your Savage, including four axles with nuts, a wrench, thread-lock and grease.

HPI Racing (949) 753-1099;
hpiracing.com.



Pro-Line

F-150 and Silverado shells for Traxxas Jato

Naturally, both looks include overspray film, decals and window masks, and they're fully licensed by Ford and GM (you don't want a Ford or a GM rep to sue you, do you?). All you have to do is decide whether you want to go blue oval or bow-tie. Ah, the heck with it—buy both.

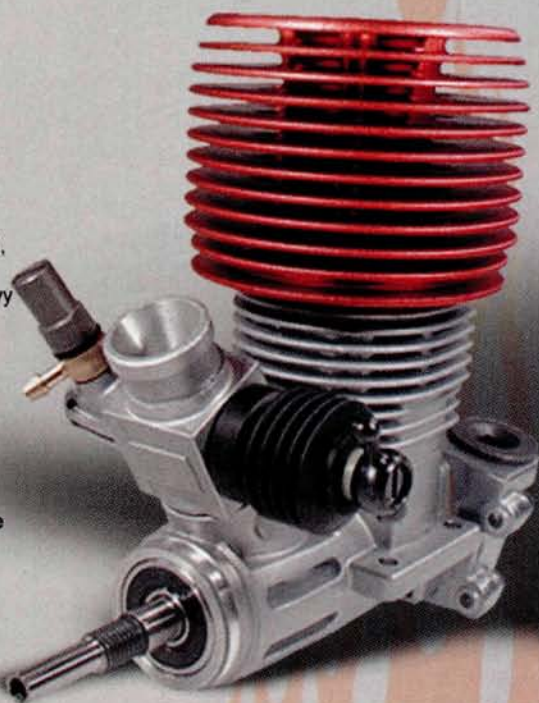
Pro-Line (951) 849-9781; pro-lineracing.com.

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HPI Racing Savage 25 Limited Edition

HPI's new Limited Edition Savage RTR comes with several of the company's most popular upgrade parts installed, including a 3-speed transmission, a polished-aluminum tuned pipe and stainless-steel dual-disc brakes. The kit also includes 19T and 47T gears, durable 4-gear diffs and a 3-shoe clutch. There's extra style, too, with 6-spoke chrome wheels, Dirt Bonz tires, and a custom blue/silver/graphite painted body.

HPI Racing (949) 753-1099;
hpiracing.com.



POWER ZONE

Team Orion Top-secret engine sneak peek!

If you wish this picture showed more, join the club! What we really want to see is the inside of this all-new mill. According to Team Orion, the latest Wasp represents a total rethink of 2-stroke nitro engine technology. No element of conventional design or construction was beyond questioning (or changing) in the pursuit of maximum performance, durability and reliability. "For the first time, a nitro engine has been redesigned for ideal flux movement using today's most advanced technology," says Orion. You'll see it first in *RC Car Action*! Team Orion Inc. (714) 694-2812; team-orion.com.



Iwaver 1/24-scale EP M1A2 Abrams RTR Tank

Iwaver's 1/24-scale replica of the M1A2 Abrams is one bad mini tank. Buttons on the transmitter control speed and direction: three straight-ahead speeds and two speeds when turning, or one speed for straight-back reverse and turning. The turret rotates 330 degrees and can do so while the tank is running. The gun also moves up and down through a 20-degree range and recoils after firing an infrared laser beam. The target is a sensor on top of an opposing tank's turret; hitting the sensor stops the tank in its tracks for 3 seconds, and flashing lights and sound effects indicate when the tank has been hit. After six hits, the tank is disabled. Up to six tanks can battle at once!

Iwaver; distributed by Great Planes Model Distributors (800) 682-8948; greatplanes.com.

HPI Racing subaru impreza

HPI ships its latest Subaru shell with two large, flexible-vinyl decal sheets for the full factory-ride look. The sheets contain window molding, headlights, grills, taillights, HPI logos and more. You also get the usuals—overspray film and vinyl window masks as well as an instruction sheet and dimple marks for perfect body-post positioning. HPI Racing (949) 753-1099; hpiracing.com.



worlds-winning gear!

IFMAR 4WD World Champion Ryan Cavaleri used LRP's latest QC3 speed control and 14A Power Supply to get the job done in Collegno, Italy. See our World Champs coverage in this issue for details!



>>>PIT BOX

DURATRAX 1/18 Micro Truck carrier bag

With its water-resistant nylon outer shell, plush cloth interior and removable partition, DuraTrax's new bag is just the thing for your mini machine. Velcro® straps secure your ride, and side pockets hold spare batteries, parts, tires a sandwich, etc.

DuraTrax; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; duratrax.com.



Pro-Line '72 chevy c10

Now, here's a unique look for your Maxx, Revo, or Savage! The included decal sheet gives you different grill and headlight options so you can do up the '70s shoebox in classic mode or with a custom look (as shown here with 40-Series Cheyenne rollers and Road Rage tires). As always, overspray film and window masks are part of the deal.

Pro-Line (951) 849-9781; pro-lineracing.com.



CEN

Mini madness

CEN's new 1/18-scale monster truck uses a standard 540 motor and a 7.2V battery pack, so it's easy to drop in your favorite "full-size" gear. The Mini Madness is available in RTR trim with a 7.2V pack and an AC charger. Expect a full line of upgrades, including aluminum shock sets, optional gearing, wheels, tires and much more. CEN Racing (714) 792-1923; cenracing.com.



Team Losi 420 series LST wheels and hubs

Losi's new 420 Series dish wheels are designed to accept Pro-Line's 40-series rubber. The wheel hexes and nuts are hard-coated aluminum for smooth operation and durability, and the wheels are available in white and in yellow.

Team Losi; distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com.

>>>PIT BOX



RPM R/C Products Revo Bumpers

These new front and rear bumpers are made of RPM's super-resilient blend of nylon materials, and they're stronger around the screw holes says RPM. A flat area on the rear bumper is a perfect place to add a ball stud as a ball hitch, and the bumper color is molded in so scratches don't show. The bumpers are available in blue, chrome and dyeable silver, and they carry a lifetime warranty against breakage.

RPM R/C Products (909) 393-0366; rpmrcproducts.com.



Team Losi FXT body for Triple-XT

With its slammed profile and chassis-hugging design, Losi's FXT shell is a great update for any Triple-XT series truck—original, MF2, or RTR. "The proportions of the FXT have been refined to create an aero package with minimal drag or hard edges for superior high-speed handling and durability," says Team Losi. Sounds good. Window masks, decals and a Drake-style rear wing are included.

Team Losi; distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com. ■

reader's ride OF THE MONTH



Bobby Wilkinson > Newalla, OK Custom Corvette C5 Pro-mod

Bobby custom-makes scale-looking RC vehicles, and his latest masterpiece is this Corvette C5 Pro-mod. The base of the Vette is a Parma Hemi Coupe chassis to which he added hand-formed sheet and solid-rod aluminum to create the fenders, cockpit, fuel cell, functioning door panels, engine compartment, rear spoiler, roll cage and wheelie bar. Next, he added gauges for the dashboard lifted from a plastic model kit, a five-point driver restraint made of shoe-strings, an aluminum steering wheel with wooden handle grips and a parachute pack made from leather. Finally,

he added a scoop to the hood which he took from another Lexan body, and the engine was harvested from a Muscle Machine die-cast car to give this quartermile bullet its final touch of realism.



Ken Hall > Castaic, CA

Traxxas E-Maxx

This E-Maxx finds itself right at home on both the local racetrack and bashing in the open fields of California. Ken is happy with the power the stock Titan 550 motors provide and added aluminum heat sinks for cooler running. A pair of Epic 3000 NiMH battery packs wired with Deans Ultra plugs powers the big truck, and a Hitec HS-5945MG high-torque servo handles steering responsibilities. His favorite mod is the RC Solutions blue-anodized aluminum roll cage, and front and rear silver skidplates that have helped his truck withstand some brutal rollovers. A custom-painted Pro-Line F150 body completes the package.



Szymon Chyc > Zakopane, Poland

HPI Savage 25

Nitro monster trucks are going strong in Zakopane, Poland. After many hours of backyard bashing, jumping and racing with a bunch of his friends, this Savage is still going strong. Its only modification is a custom skidplate that protects the chassis during sick jumps and a GS Racing exhaust deflector. To top his monster ride, Szymon painted an HPI Nitro GT-1 body fluorescent yellow using Tamiya spray cans.



SEE YOUR RIDE IN READERS' RIDES AND WIN NOVAK GEAR!

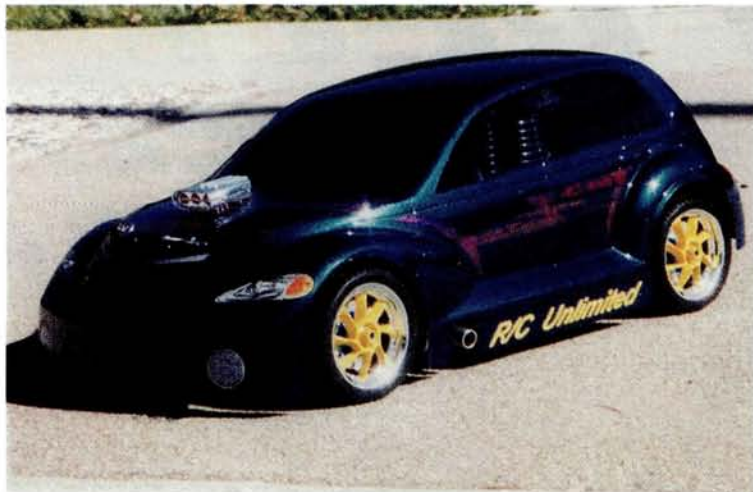
If we feature your vehicle in Readers' Rides, you win a one-year subscription (or renewal) to *RC Car Action*. Reader's Ride of the Month wins a Novak battery pack, and Reader's Ride of the Year wins a Novak brushless motor system! Email your 300dpi TIFF or JPEG images to readersrides@airage.com, or send color prints and a description to Readers' Rides, RC Car Action, 100 East Ridge, Ridgefield CT 06877-4606 USA. Be sure to write your name, address and phone number on the back of each photo and on your letter. Submissions will not be returned.



[READERS' RIDES]

Fred Harland > San Jose, CA
Schumacher Fusion 21

The Schumacher Fusion 21 is a 1/10-scale nitro tourer with a giant .21 engine shoehorned onto the chassis to make it one of the fastest cars available. We're sure Fred sees plenty of gaping mouths when this seemingly harmless HPI Chrysler PT Cruiser rockets past. Along with the body, Fred installed a set of Hot Works custom wheels.



Steve Kobayashi > Torrance, CA
Yokomo Drift Package D1 HKS Hiper Silvia RS-2

Yokomo offers several highly detailed drift kits that come complete with true-to-scale body styling along with sideview mirrors, windshield wipers, exhaust pipes and wings that can be bolted on for an ultra-realistic look. All of that made it hard for Steve to resist, so he bought a drift package with a HKS Hiper Silvia RS-2 body and painted it and the wheels bright orange to match. To make sure that his drift car stands out from the rest, working headlights and taillights were installed in the body. Nice work!

POWER UP YOUR RTR!

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Reedy "Spec 19 Quad-Mag Motor."

Step up the power of your RTR with Reedy's Quad-Magnet "Spec 19" Motor! A great choice for the B4 RTR, the TC3 RTR, or any Ready-to-Run electric with a speed control rated for a 19-turn or less motor.

#513 Reedy Spec 19 "Quad-Mag" Motor



Reedy's "Rated-X" Matched Sport Packs. Fully assembled in clear tubes so you can see the matching info right on the label of each cell. Don't settle for "mystery" cells in your sport packs, get Reedy's "X-Rated" packs and see the power you've been missing!



Suggested Retail Price

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#699 Reedy "Rated-X" Sport Pack, Panasonic 3000 cells

Reedy Ni-MH Receiver Packs for Nitro Cars and Trucks.

Reedy receiver packs give you the long-lasting, reliable power needed for nitro racing, and have a great low price that makes them your BEST choice!



#615 Reedy Ni-MH Receiver Pack, (Hump style for RC10GT, Monster GT, Etc.)

#614 Reedy Ni-MH Receiver pack, (Flat style for Nitro TC3, etc.)



John Gragner > Asheboro, NC
Traxxas Nitro Rustler

Underneath John's seemingly mild '72 Chevy pickup body is a fully tweaked Nitro Rustler chassis. It sports carbon-fiber upper and lower chassis plates, all-aluminum suspension, Lunsford titanium turnbuckles and hingepins, Robinson Racing vented flywheel, Hardcore Racing Mutant engine cooling head, CVEC tuned pipe, Venom Speed Meter, Dynamite fail-safe, Pro-Line Speed Hawg tires and Futaba 2PL radio system.

Wade Brown > Northridge, CA
XTM Racing Mammoth

After seeing his friends' cars featured in Readers' Rides, Wade had to try and get his XTM Mammoth shown. The very cool flame paint job complete with skulls scattered over the Pro-Line Crowd Pleazer body did the trick. On the chassis, Wade took an SH .28 engine and converted it to a non-pull-start and added a sliding clutch and steel spur gears that can stand up to heavy thrashing. A Hitec HS-5945MG servo handles the steering, and a HS-5625MG servo works the throttle/brakes. Pro-Line Maxx Velocity 40 Series dish wheels and Bow Tie 40 Series tires give this monster the necessary bite for the track. ■



Mini-MAX

Reedy Hop-Ups for Micros!

ONLY
\$42.99 Suggested
 Retail Price



Reedy Mini-Max High-Voltage 1100 Ni-Mh Racing Battery Pack. Higher voltage means more power and that's just what you get with Reedy's new Mini-Max 1100s. Featuring much higher voltage output than stock battery packs the Mini-Max HV 1100 pack is the ticket to making your micro car rip up the road. Comes completely factory assembled with connector and fits directly into the RC18T! #616 Reedy Mini-Max 1100 Ni-Mh Battery Pack



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Reedy Mini-Max Modified Motor. Seriously turn up the heat in your micro with the Reedy Mini-Max Mod Motor. Big time features like ball bearings and replaceable brushes are shrunk down to the popular 280-size to fit most 1:18 vehicles, especially the RC18T.

#290 Reedy Mini-Max Modified Motor

www.rc10.com/reedy

REEDY

A Division of Associated Electrics
 3585 Cadillac Ave. Costa Mesa, CA 92626



Easy sticker-residue cleaner

Use Duck Adhesive Remover, available at most shipping stores, to remove leftover sticker residue, tire marks, Sharpie marker outlines and just about anything that sticks to a Lexan body.



YOUR TIP

Transponder number reminder

Skyler Gall > Salt Lake City, UT

Store your AMB personal transponder numbers in your cell phone's address book for easy access. You always have your cell phone in your pocket, so you'll be ready with your transponder number when the race director asks for it.

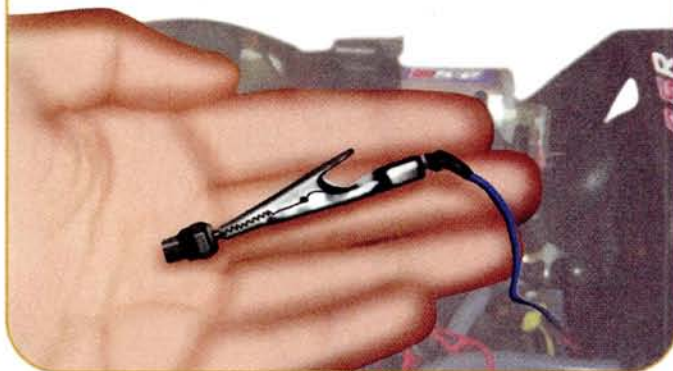


YOUR TIP

Simple EZ-Start glow-plug connector

Markel Andersson > Sweden

The blue glow-plug wire on various Traxxas models equipped with the EZ-Start system is difficult to connect and remove, and the shrink-wrap always gets damaged by using pliers to grip the wire. To simplify things, cut the connector from the coil, and solder an alligator clip to the end of the wire. Bend the teeth inward at the tip of the clip for a better fit.



YOUR TIP

Zenoah pull-starter protector

Michael Lawlor > Dingmans Ferry, PA

The pull-start housings on Zenoah and other similar gasoline engines have intake vents that feed air to the internal cooling fan. Unfortunately, these vents can suck in small objects such as rocks and leaves that may clog the intake, or worse, damage the pull-start mechanism and cooling fan. The best solution is to apply mesh window screen (available at most hardware stores) to the inside of the pull-start housing to prevent objects from entering. Use Pacers' Zap-a-Dap-a-Goo to glue the screen in place.

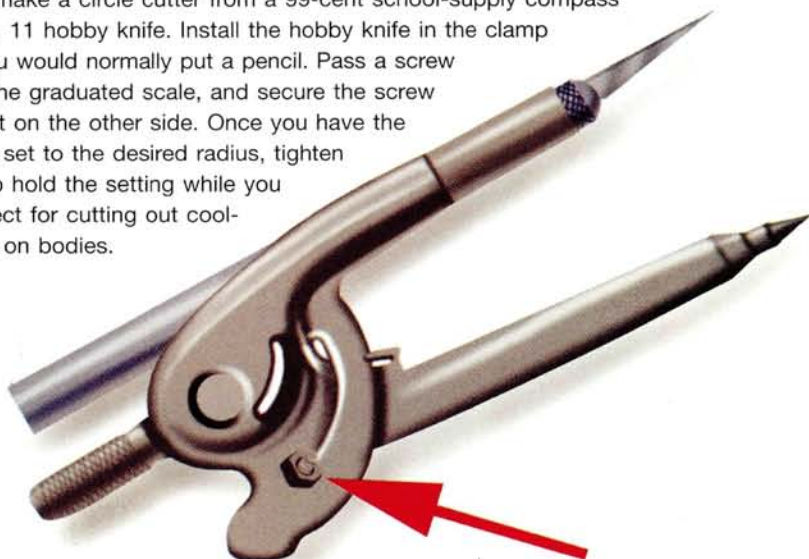


YOUR TIP

Cheap and effective circle cutter

Kevin Tuazon > Granada Hills, CA

You can make a circle cutter from a 99-cent school-supply compass and a no. 11 hobby knife. Install the hobby knife in the clamp where you would normally put a pencil. Pass a screw through the graduated scale, and secure the screw with a nut on the other side. Once you have the compass set to the desired radius, tighten the nut to hold the setting while you cut. Perfect for cutting out cooling holes on bodies.



YOUR TIP

Free parts tray

Gary Nelson > Chillicothe, OH

Once washed thoroughly, the foam trays used for packaging meat work great for holding small parts when you work on your cars. They prevent the small parts from rolling around, and you can stick the screws into the foam to keep them in any order you want, so you'll remember their installation order.



YOUR TIP

High-torque RC18T servo-saver

Skip Shartzter > Email

The plastic band used in the RC18T's servo-saver becomes worn quickly, and that leads to slop and poor centering ability. Reinforce the band with a coil cut from a spare RC18T shock spring. First, cut the last coil from the spring. Next, file a groove down the center of the servo-saver band. Slide the spring coil over the band, and then reassemble the servo-saver.



WE WANT YOUR TIPS!

If we publish your tip, you'll win a 6-month subscription (or extension) and a chance to win the "Tip of the Year" grand prize: an OFNA RTR. Email your tips to GeorgeG@airage.com. Include a photo or scan a sketch if you can. Snail mail? Write to Pit Tips, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Be sure to write your name, address and phone number on each tip you submit.

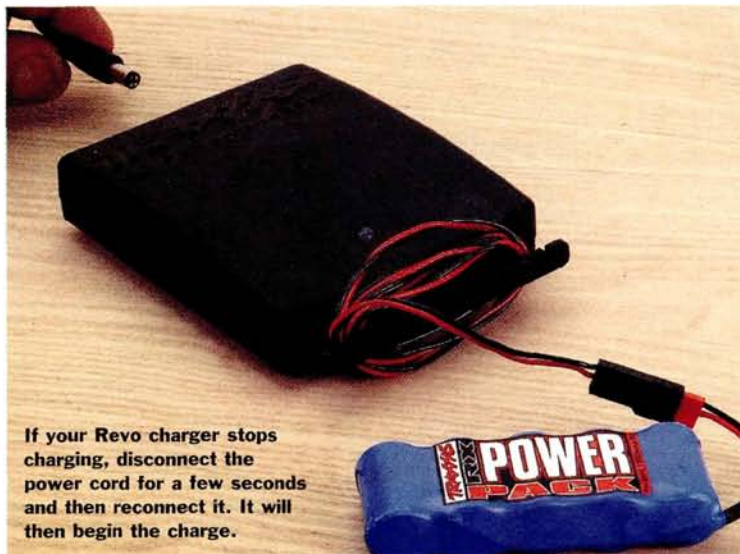
CLICK TRIP
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»» More Pit Tips online!



We screen all Pit Tips for functionality, feasibility and safety but do not test them. RC Car Action is not responsible if you mess up your gear or yourself by using the tips given here. If you aren't comfortable following any tip we show—DON'T!

Quirky Revo battery charger

Q The battery charger that came with my Revo will not charge the stock battery pack anymore. I know the charger gets power because the green LED lights up when I plug it into a wall socket. But this light stays on when I connect the battery pack. It's supposed to flash while the charger is charging and stay lit when the pack is fully charged. I'm not sure whether my battery pack has gone bad or the charger has stopped working. Any advice? [email] Mike DeCristo



If your Revo charger stops charging, disconnect the power cord for a few seconds and then reconnect it. It will then begin the charge.

A My Revo's battery charger sometimes does the same thing. It starts the charge cycle most of the time, but it refuses to start charging when the battery pack is completely drained. Try connecting the battery pack to the charger before you plug the charger into the wall socket. If the charger is already plugged in, disconnect the power cord from it for a few seconds, and then reconnect it. Doing this will start it charging every time.

QUICKQUESTION

Can I use Losi Triple-XT wheels on my Associated T4?

Both trucks have similar wheel offsets, so the Triple-XT wheels are compatible with your T4. The Associated truck uses longer drive pins, so you'll have to grind them down slightly to make them fit properly.

Jammed gear mesh

Q I have a Team Losi Triple-XT RTR truck, and when I drove it for the first time, I lost control of it and slammed it head-on into a curb. It still runs, but a loud grinding noise comes from the motor. The motor also runs really hot, and this caused one of the wires to be un-soldered from the motor-wire tabs. This is my first RC car, so I'm not sure what to do. I plan to take it to the hobby shop, but I decided to run my problem by the experts first. Zach Moses Bakersfield, CA

A It sounds as if the motor moved during the crash and fouled the pinion-gear and spur-gear mesh. This is a common problem but easy to fix. Remove the transmission's plastic gear cover so that you can inspect the gears (you have to take out three screws to remove the gear cover). I suspect that the pinion and spur gears are jammed together, and that makes the grinding sound and causes the motor to heat up. If the plastic spur gear looks OK (no missing teeth or flat spots) you can reuse it, but if it's damaged, replace it. Next, loosen the two motor-mounting screws so that you'll be able to reset the gear mesh. Put a piece of paper between the two gears, and rotate the spur gear with your thumb to feed the paper between the gears. Retighten the motor screws and remove the paper. The paper leaves just enough of a gap between the gears to ensure a proper mesh. Make sure that the motor screws are good and tight before you replace the gear cover. Finally, re-solder the wire onto the motor. If you don't have a soldering iron, the folks at your hobby shop should be able to lend you a hand.



Left: remove the gear cover from the transmission so that you can inspect the gears.

Above: a piece of regular paper is the perfect tool for setting gear mesh.

[TROUBLESHOOTING]

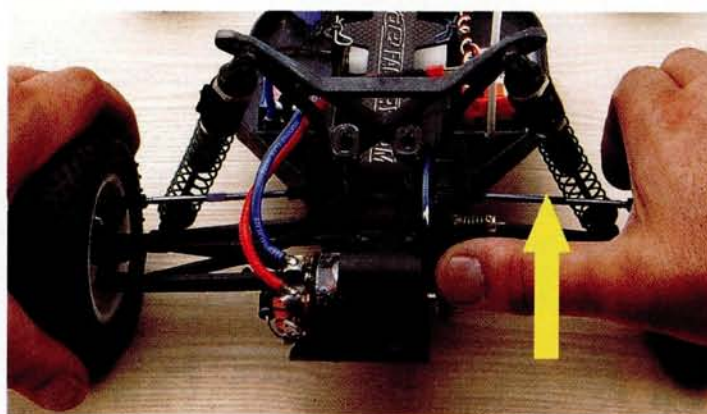
Loose diff

Q For some reason, my T4's slipper clutch slips all the time, even when I lock it down completely. I decided to inspect the slipper components, and I even scuffed the slipper pads with sandpaper, but it still slips continually. Do you think that the tension spring is faulty? I'm not sure what to replace to make the slipper work properly. [email] Shane Crenshaw

A I suspect that it's the ball diff in the tranny that's slipping—not the slipper clutch. The ball diff has an adjustment screw that can be accessed through the right diff outdrive—the cup that the dogbone is mated with. Tighten the slipper clutch all the way, and then try to rotate the spur gear with your thumb while you hold the rear wheels. If it rotates easily, slide a $\frac{5}{64}$ -inch hex wrench into the right outdrive, and tighten the diff-adjustment screw $\frac{1}{2}$ turn. Now check the spur gear again to check the setting. You should find that it's more difficult to move. Keep tightening the diff screw $\frac{1}{8}$ turn at a time until the spur gear is almost impossible to move. When the diff is tight, you'll have to adjust the slipper clutch by loosening the nut slightly. Recheck the diff-adjustment screw after every five or six runs to keep it set properly.

Top: to check the diff-tension setting, tighten the slipper-clutch adjustment nut all the way to lock the slipper. Next, hold the rear wheels and rotate the spur gear with your thumb. If you can rotate the gear easily, you have a loose ball diff.

Bottom: tighten the ball diff by inserting a $\frac{5}{64}$ -inch hex wrench through the right diff outdrive and then tightening the diff-adjustment screw a little at a time, rechecking the setting after every adjustment. When it's properly adjusted, the spur gear should be very difficult to rotate with your thumb.



Traxxas Revo Hardened Steel Spur and Clutchbell

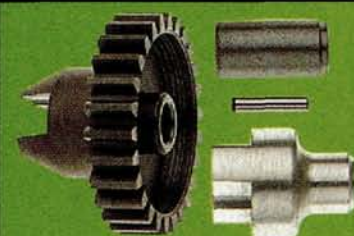
NEW



Traxxas Revo 2.5 Extra-Hard Steel Combo Includes Precision Machined 40T Spur / 16T Clutchbell, and 3 Lock Washers. RRP 8040.

PERFORMANCE FROM ROBINSON RACING!

T-Maxx/2.5-Maxx FORWARD ONLY Steel Gear Kit



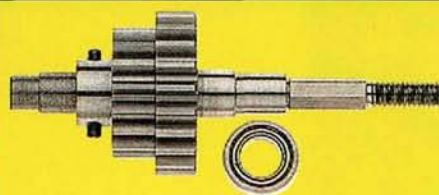
This kit contains a 26T hardened steel output gear, a forward drive hub adaptor, steel spacer and Pin. RRP 8586.

T-Maxx/2.5-Maxx Lightened Spur And Double-Disc™ Slipper Kit



RRP's line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx/2.5-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch-Plate/Gear Adaptor, 2 Slipper Pads and 2 Plates to deliver the adjustability you need and the increased performance that you demand. Complete Slipper Kits are available in the following sizes:
RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock Size) for E-Maxx.
RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro.
RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro.
RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx.
Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

T-Maxx/2.5-Maxx Steel Top Shaft



This precision machined hardened steel top shaft will fit all T-Maxx. Includes oversize ball bearing. RRP 8525.

sponsored by



Tight ball cups

Q I just finished building a Factory Team RC18T. The truck went together great, but the ball cups fit too tightly on the ball studs, and that causes the suspension to bind. I put a drop of oil on the ball studs before I snapped the ball cups into place. This helped a bit, but the suspension still binds. What should I do?

Michael Quintana
Taft, CA

A You may be able to fix a few of the ball cups simply by crimping them with pliers while they're installed on the ball studs, but others probably require more attention. Remove the ball studs and chuck them into a Dremel tool. Spin them at a low rpm while you sand them with fine-grit sandpaper. It will only take a little sanding to provide the perfect fit.



Above: if the ball cups fit the ball studs too tightly, try crimping the ball cup with pliers while it's installed on the ball stud.



Left: if that doesn't work, use a Dremel tool to sand the ball studs down. Sand a little at a time, and check the fit often until the ball cup moves freely on the ball stud.

QUICKQUESTION

How often should I clean the air filter on my nitro truck?

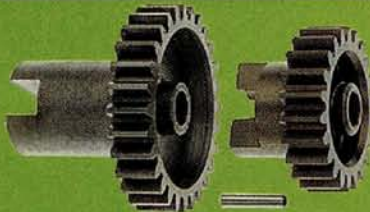
That depends on the type of filter you have and where you drive your truck. Typically, you should clean and relube the filter after every hour of running—more frequently, if you run in very dusty conditions. Installing a prefilter over the air-filter element will allow you to run for longer between cleanings.

T/E-Maxx/2.5-Maxx Steel Diff Gear Set



T/E-Maxx/2.5-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10 .003" shims. RRP 8590.

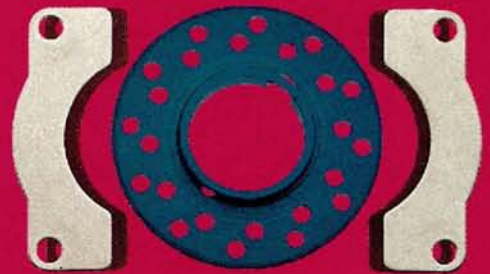
T-Maxx/2.5-Maxx Forward Primary & Reverse Gears



This kit contains a precision machined hardened steel primary forward gear, a hardened aluminum reverse gear and steel pin. RRP 8521.

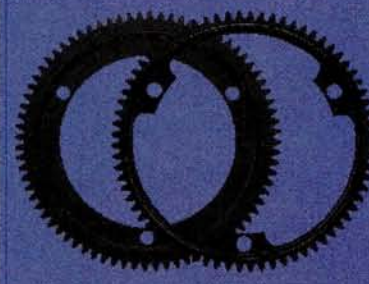
**REAL
PERFORMANCE
PRODUCTS!**

T-Maxx/2.5-Maxx Aluminum High Performance Brake Kit



This lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. Also fits newer T-Maxx. RRP 8562.

T/E-Maxx/2.5-Maxx Accessory Spurs



A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72, 74 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65 and 72T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.



ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937

Incompatible battery connector

Q I decided to install a 5-cell rechargeable receiver pack in my buggy because I was tired of replacing the alkaline batteries. Unfortunately, the battery connector is too big to fit the connector on the on/off switch. I ended up installing the battery connector directly in the receiver battery port. I can now run the buggy, but I miss the on/off switch. Are any adapters available to make the battery pack compatible with the switch? [email]

Justin Neighlor

A It sounds as if your battery pack has a 3-pin connector and the on/off switch has a 2-pin connector. Adapters are available at your hobby shop, and installing one is the easiest solution to your problem. You could also modify the connector on your battery pack to make it fit the connector. To do this, you'll need a hobby knife with a sharp blade. The battery pack has only two leads, and you can remove part of the connector on the side with the empty socket. Simply slice away material from the connector until it fits inside the switch's 2-pin female connector. Remove a little material at a time, and check the connector's fit after making every slice.



Above: these plugs obviously won't fit together. Installing an adapter is the easiest way to solve this reader's problem.

Left: you can also modify the 3-pin connector by removing the empty socket with a hobby knife. You have to be careful, however, not to remove too much material, or you'll end up with an exposed pin or worse: the connector will fit loosely and may be disconnected in a crash.

RC10-GT Hardened Steel Idler Gear



Cut from solid steel stock, this RC10-GT gear is lightened and hardened for super quiet precision and extra long life. Black tranny grease included. RRP 2213.

MAKE NO COMPROMISES!

Hardened Aluminum Mini Pinions



NEW For Associated RC18T .5 mod Lightweight Hardened Aluminum Mini Pinion, Available in 12T Thru 18T. RRP 16XX.



www.robinsonracing.com

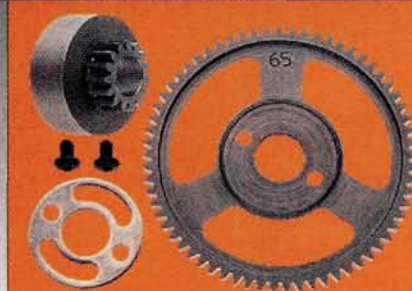
HPI Savage .21/.25 Nitro Steel Combos



These Spurs and Clutch Bells are CNC machined from solid steel and then hardened for unmatched performance. Savage .25 (16x48) RRP 7048. Savage .21 (14x52) RRP 7052.

DON'T SETTLE FOR SECOND BEST!

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. RRP 2365.

Hardened Diff Gear

Hard anodized, precision CNC machined aluminum diff gear. RC10-GT RRP 1513. Losi XXX NT RRP 9500.



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Loose stinger

Q I converted my old Mugen buggy into a truggy and installed a monster truck body. I had to install a rubber exhaust extension on the stinger to direct the exhaust fumes away from the body. The only problem is that the exhaust extension always falls off when I run the truck. I use zip-ties to hold it in place, but that only works for a while. Can I glue the extension into place? [email]

Robert Shimeka

A Don't use glue because it will only work temporarily and will make a mess on your tuned pipe. Use a small metal hose clamp—the type available at most hardware stores—to secure the extension to the stinger. The clamp will hold the extension more securely than zip-ties. Give it a shot. ■



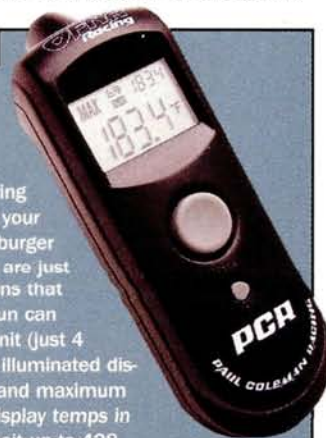
A small hose clamp (like the ones used to secure heater hoses in cars) works great to secure an exhaust extension.

TOOLBOX

OFNA PCR Temp Gun

How hot is your engine? Is that gearing change overheating your motor? Is your hamburger fully cooked? These are just some of the questions that OFNA's PCR temp gun can answer. The small unit (just 4 inches long) has an illuminated display, shows current and maximum readings, and can display temps in Celsius and Fahrenheit up to 428 degrees F. It even shuts off automatically after 60 seconds (unless you're still pushing the button).

OFNA PCR Temp Gun—item no. 10154; \$50. OFNA Racing (949) 586-2910; ofna.com.



NEED HELP?

Send your "Troubleshooting" questions and comments to troubleshooting@airage.com, or mail them to "Troubleshooting" c/o RC Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA.

HPI Savage .25 3-Shoe Vented Flywheel

NEW



The Savage .25 3-Shoe flywheel is precision CNC machined from 7075 aluminum and vented for increased airflow. RRP 7005. (.21 Pull-Start 2-Shoe version RRP-7000.)

REAL PERFORMANCE PRODUCTS!

Traxxas Revo/2.5-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. Revo RRP 8052 and 2.5-Maxx RRP 8552 Vented Flywheels. Both Blue Only.

T-Maxx/2.5-Maxx Hardened Steel Clutchbells



CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

HPI Savage .21 Extra Hard Steel Clutchbells



These Clutch Bells are CNC machined from solid steel and then hardened for unmatched performance and durability. Available in 14T, 16T and 18T. RRP 70XX.

RC-10GT Hardened Steel Clutchbells



These Clutch Bells are CNC machined from solid steel then the teeth are machined on. This makes the part stronger with less gear "run out". Available in 14T thru 20T, 22T and 24T. RRP 22XX.

48P Absolute Series Pinions



Super hard, lightened and cut with superb precision. Runs great with any 48P spur! Available in 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428.

48P / 64P SuperLite Aluminum Pinions



They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P).

48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035.

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50+ GREAT RC TIPS



» NITRO » OFF-ROAD » TOURING » CLASSICS » TOOLS » FIXES » MORE

BY RC CAR ACTION TEAM | PICS BY PETE HALL

You want tips? We've got tips. Here you'll find over 50 of 'em to help you build better, extend the life and performance out of your gear, make helpful tools and just get more out of RC in general. Nitro and electric, on-road and off, you're sure to find some gold here. And as always, we're looking for your best tips in "Pit Tips" every month. Keep them coming!



HEAD CLEANER

Attention, neat freaks: if there's dirt between your engine's heat-sink fins that's out of toothbrush range, try "flossing" the head with a pipe cleaner.



SOLDER STORAGE

You aren't lugging a full roll of solder to the track every Sunday, are you? Coil up a foot or two of the stuff, and leave the rest at home. Wrap the solder around a magic marker or something similar to neatly coil it; then slip it off and tuck it into one of your box's drawers. Less weight to carry and it frees up space in your pit box, too.



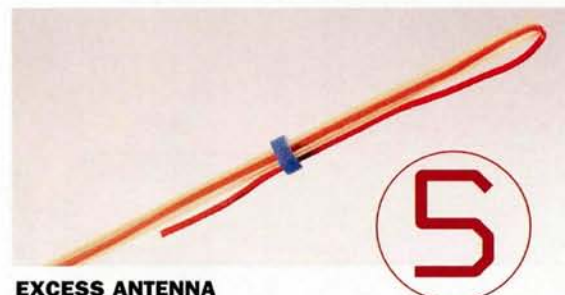
SHRINK THOSE CVDS

"I had the lead; then my CVD lost a pin." We've heard (and said) that one before. Next time, slip a collar of heat shrink over the CVD (or any "CV-style" joint) to capture the pin in case the setscrew backs out.



GET SLAMMED

For a super-slammed sedan shell, drop the body until it bottoms out, and then drag a marker around its perimeter to make a perfect trim line.



EXCESS ANTENNA

If you're flying more than an inch of wire out of the antenna tube, you gotta wrap that stuff up. Rings cut from fuel tubing, wire insulation, or heat-shrink all make good wire wrappers.

REVO RIMS FOR YOUR MAXX

Dave Mafucci turned us on to this one. With a little rib-trimming on the rims' insides for hub clearance, you can run Revo wheels on any Maxx truck.

6

7

ON THE BALL

If your car's brake linkage pulls a wire hoop to activate the brake, place a pivot ball between the hoop and the brake spring. The ball will self-center in the hoop and spring when you apply the brake for the most consistent pressure.

BALL-CUP DE-SLOPPER

Same concept. Drip a little CA into the cup and swirl it around; then let the excess drip out and leave the coating inside to cure.

8

9

NEVER LOSE ANOTHER E-CLIP

A dab of silicone sealant or Shoe-Goo is all it takes to make an E-clip pop-off-proof, but you'll still be able to pull 'em off when it's time for maintenance.

FIND THOSE POSTS

Oops!—you painted the body already and you forgot to mark the body-post locations. Put a dab of paint on the tip of each post; then carefully lower the body onto the posts, and lift it off. There are your hole locations.

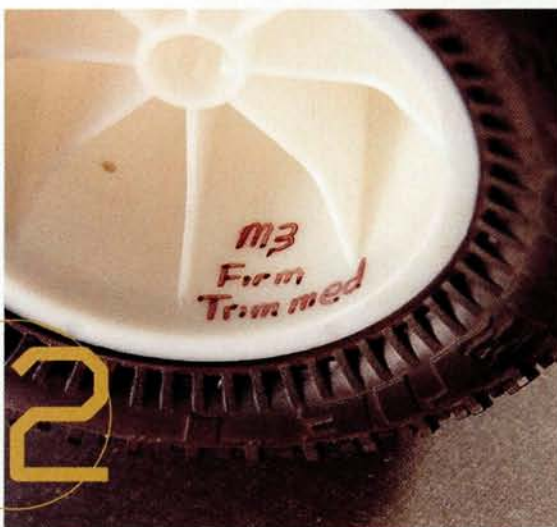
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11

THIRD HAND

Instead of wishing for a prehensile tail or genetic mutation, just wrap a rubber band around your pliers' handles to spring-load them. Now you have a self-squeezing third hand.



12

LABEL YOUR RIMS

Uh-oh ... was that a Bomb-one insert or a Pro-Line firm? Did I trim it or not? And what compound is this tire? Don't rely on the peanut in your skull to remember; write it all down in the rim. Use a Sharpie.

BODY-CLIP TIPS

These are all classics ...

MAGNET MINDER

Stick a hunk of magnet material to your pit box to create an instant body-clip holding cell. Also holds nuts, washers, etc.



13

THE STRING TRICK

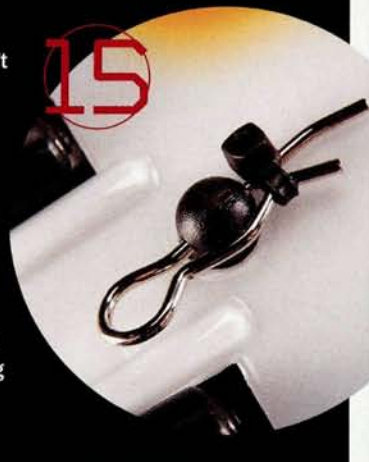
Tie floss to each body clip, pass the line through a tiny hole in the body and knot it underneath. Now the clips stay with the body at all times.



14

ZIP 'EM

When you just can't risk losing a body clip, zip-tie the open end so it's locked onto the post. You'll have to snip the tie to remove the clip, but better to sacrifice a few zip-ties than your hour-long nitro Main.



15

CHUNK BUSTER

Are your foam tires chunking at the sidewalls? Apply a coat of CA to the sidewalls before your next run, and they'll last much longer. Use the thick stuff; you don't want to saturate the foam.

16

17

ANOTHER TRIMMING TRICK

To help with straight cuts around curved surfaces, use the edge of a strip of masking tape to mark the cut line.

OK, NOW I SEE THEM

Ever try to see a black screw deep inside a black gear in a 2-speed tranny? Not fun. When you assemble the transmission, put white paint on the screw so you can spot it after assembly. For clutch-type units with two screws, paint one white and the other yellow so you don't confuse them.

18

19

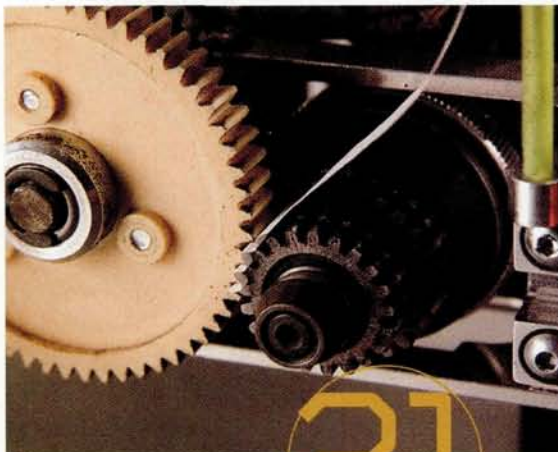
SERVO AND TRANNY DUST-PROOFING

A little grease around the output shaft of your servos and between the tranny case halves will keep grit out of the works.

HINGEPIN DE-SLOPPER

This is an old "RC Doctor" trick. To fix a worn hinge pin bore, fill it with thick CA; then slip an oiled hinge pin into it. After the CA has cured, you can slip the hinge pin out (because you oiled it), leaving a slop-free fit.

20



THE PAPER TRICK

Another classic. To set gear mesh, squeeze a strip of notebook paper between the gears, slide the pinion up against the spur and tighten the mounting screws. Turn the spur gear to spit the paper out, and you should be left with just a tick of free play. Perfect.



WHICH WAY IS LEFT?

Slip a ring of wire insulation over the left threaded side of your turnbuckles for easy identification during reassembly. To avoid "Which way do I turn it?" confusion, install the buckles so that all the left-thread ends face the left side of the car.



GRAPHITE PROTECTION

Applying thin CA to the edges of plate-graphite parts to prevent delamination is a great tip, but how do you apply it without dripping it all over the chassis? A Q-tip is the perfect tool. Just saturate it with CA, and use it to "paint" the edge.



LIGHTWEIGHT WIRE GRABBER

RadioShack's "third-hand" tool is handy, but heavy and hard to pack in a pit box. Lighten your load by making a lightweight version as shown. Two clips and a Popsicle stick will do the trick.

TOTALLY TUBULAR

Just one more inch—c'mon, get in there—darn, the antenna wire just won't slide through its tube. Run the wire between your fingers to de-kink it as best you can; then put a drop of light oil on its tip. It should slide right through.

25

BONE UP

If the dogbone ends of your car's drive axles have pins that extend past the outdrive slots, grind the pins so they're flush with the outer surface of the outdrive; the outdrives will last longer.

THROTTLE TRIGGER

Run your throttle linkage a little longer than usual so you can bend an L-shape into its end. Now you can easily blip the throttle for warm-up without firing up your radio.

27

28

DIFF LOCKER

Ever tried to lock a gear diff without resorting to something permanent such as JB Weld? Those gears seem to chew through anything. Silly Putty is the solution; it will lock that diff solid, but you can remove it easily. And it bounces, lifts comics and stretches...

TAG THOSE PACKS

Save the paperclip thingees from your bags of bread, hot dog rolls, etc.; they make perfect tags for your stick packs. After you've dumped a pack, put a tag on it so you don't confuse it with a charged pack.

29



30 SHORT-CIRCUIT PROTECTION

Ever notice how most power supplies make you connect the alligator clips dangerously close to each other? To prevent a short, use a spare tire to separate the clips.



31 CUTS ANYTHING

Get yourself a set of Craftsman Accu-Cut or a similar anvil-type cutting tool. It's perfect for making straight, precise cuts in fuel tubing, servo tape, silicone couplers and body posts.

STRIP FIXES



THE OLD SLOT TRICK

Stripped a hex screw? Use a cutoff wheel in your Dremel tool to slot it so you can get it out with a flat-blade screwdriver.

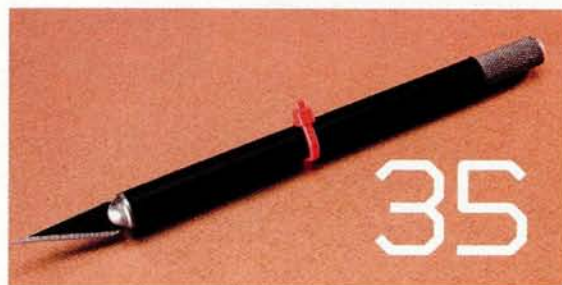


HOLE FILLER

A stripped hole in plastic can be repaired by dripping CA into the hole or by melting scrap plastic from the parts tree into the opening. You can also try substituting a larger screw.

SHARPEN UP

If you're having trouble with a hex screw, the problem may be the tool. If the tip's edges are rounded, grind away the tip so fresh flats grab the socket.



35 ROLL STOPPER

Don't you hate it when your X-Acto knife rolls off the bench and lands someplace inconvenient ... like, your thigh? Cinch a fat zip-tie over its shaft to prevent roll-away. And put a Band-Aid on that leg already, yeeesh.

36 FUEL-LINE PINCHER

Rings of fuel tubing or O-rings can be used to give your fuel lines extra grab. Slip the ring over the tubing; then slide it up over the nipple after the tubing has been installed.

37 GOOD USE FOR A NO-GOOD CELL

Don't toss that toasted sub-C; save it to use as a pack spacer. It's the perfect size (of course), and you can use the extra weight to adjust chassis balance.

38 FLOP FIXER

If your pull-starter's cord has stretched and no longer retracts so tightly that the handle stands up, just pull the slack out and tie a new knot closer to the handle.

39 QUICK BUMPER REMOVAL

Slot your front bumper's mounting holes so the screws aren't captured; now, to remove the bumper, all you need to do is loosen the screws and slide it out instead of removing the screws completely.

40 CA DE-CLOGGER

You can rescue a clogged glue tip by soaking it in acetone. Hardware store closed? Use nail-polish remover instead; it's really just acetone with coloring.

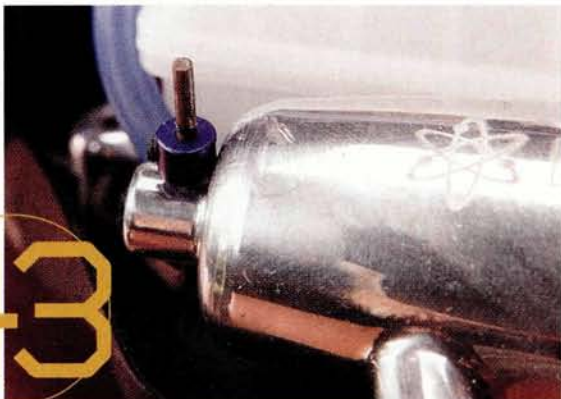
41 CLEAN LUBE

Ordinary bar soap makes a great dry lube for screws and gears. Just swipe the bar across the threads or teeth.

42 SERVO CENTERED

After you've centered your servos but before you install the horns, draw a line on the output shaft and case to mark their centers. If needed, you can re-center the servos without powering up your radio gear.

43



STAY-PUT PIPE

Run your pipe mount about $\frac{1}{4}$ inch past the pipe's lug so you can put a linkage collar on the wire for extra security. And Loctite those setscrews!

44



NO-MESS FILTER LUBING

When it's time to squish Goo into air filters or volume compensators, just drop the parts into a plastic bag, squirt the Goo inside and then squish away by squeezing the bag. Now you won't have to wipe oil off your fingers and onto your pants.

45



COLOR-CODED HEX WRENCHES

So you wore the labels off your drivers, and you keep grabbing the 0.050 instead of the $\frac{1}{16}$? Mark them with colored fuel tubing; slip different colors over the shafts.

46



ROAR WINDSHIELD

If you need to make a ROAR-legal windshield opening, just use a standard sedan wheel as a template. It's 2 inches in diameter, just as the rule book requires.

GEARBOX SEAL

If your $\frac{1}{8}$ -scale buggy has open-bottom gearboxes, run a bead of sealant or thick grease around the opening before you install the gearboxes. You'd be surprised how much dirt sneaks into the box when you don't seal it.

47

48

BETTER PAINT MIXING

Instead of tossing those old diff balls, drop one into each of your paint bottles for better mixing when you shake them. Hey, it works for spray paint, right?

49

SHOE-GOO SAVER

To keep your Shoe-Goo or Goop fresh after opening, don't rely on the cap alone. Thread the cap over a section of polybag for maximum seal action.

SMALL-PARTS SOAKER

Fishing small parts such as diff balls out of a solvent container is a pain. Make the job easier by "teabagging" the parts in a coffee filter (or empty an actual teabag).

50

51

BETTER BRAKE ADJUSTER

If the thumbwheels on your threaded brake linkages are too tiny for your gorilla mitts, use pinion gears as linkage-turners instead.

SOFT-GRIP JAWS

If you need to grab something delicate with your needle-nose pliers, pad the jaws with pieces of fuel tubing. Too thick? Try heat-shrink tubing instead. ■

52

Tamiya goes mid-motor with the latest TA-series tourer

SINCE ITS RELEASE IN 2000, Tamiya's TA04 electric touring car has enjoyed a successful run, and now, the time has come to meet its successor: the TA05. In an effort to achieve the best possible balance, dual belts remain on the chassis to drive the front and rear diffs, but now they are equal in length to reach a centrally mounted motor. Along with improved weight balance, the designers wanted the TA05 to be easy to work on. To achieve this, a single-deck semi-tub chassis replaces the previous upper and lower deck chassis plates, and a one-piece motor/spur gear mount and two-piece detachable bulkheads help make maintenance easier. The TA05 is entirely new except for the suspension system; the tried-and-true suspension from the TA04 finds its way onto the new sedan. Time to test.





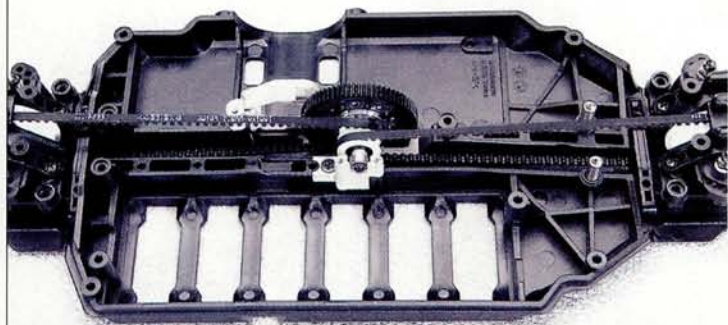
Ferrari
F430
Tamiya

TA05

KIT FEATURES

CHASSIS. A semi-tub chassis with strengthening ribs makes a mostly rigid base for the TA05; some torsional flex is evident, which is not necessarily a bad thing. The right side of the chassis is molded to accept stick and side-by-side packs. Room is tight on the chassis for the speed control and receiver, so only smaller units will fit. If you have a large receiver, it can be mounted on top of the steering servo, but that will raise the center of gravity. The steering servo is also cramped and requires that half of one of the servo ears be cut off to fit. Identical bulkheads are used at the front and rear to hold the diffs in place and provide mounting points for the shock tower and upper camber links. The bulkheads' two-piece design allows the diffs to be removed for maintenance without the need to perform a major teardown. Small openings under the bulkheads allow small stones and other grit to pass through the chassis. Thick plastic upper braces add extra support to the chassis by binding the semi-tub to the bulkheads.

DRIVETRAIN. The TA05's mid-motor drivetrain distributes weight on the chassis more evenly to assist in handling. Two identical drive belts reduce driveline friction for improved efficiency at high speeds. The motor and spur gear needed a solid mounting system to hold them securely in place, especially since the TA05 does not have an upper deck. Tamiya engineered a very impressive one-piece, cast-aluminum mount that is bolted into the center of the semi-tub chassis where the motor and



The mid-motor drivetrain design is the standout feature on the TA05. Two identical belts drive front and rear ball differentials and a one-piece cast-aluminum mount holds the motor and spur gear assembly in proper alignment.

BUILDING AND SETUP TIPS

The all-new TA05 chassis was very easy to build and can be knocked out in an evening, minus painting and detailing the body. With Tamiya's exceptional instructions, parts fit and quality, even a first-time builder can end up with a perfect rolling chassis.

STEP 2: BALL DIFF. Be careful when you adjust the ball diff. It can be damaged if you crank it down too much, so take it slowly.

STEP 7 & STEP 13: SUSPENSION ARMS. Two plastic spacers on the hinge pin position the suspension arm. Although one is slightly larger than the other, they can be easily confused, so keep track when you cut them off the parts tree.

STEP 23: MOTOR INSTALL. Don't overlook the extra-long 2.5mm hex wrench Tamiya includes. You'll need it to install the lower mounting screw for the motor because it has to reach the motor plate in the center of the chassis through a hole in the side of the chassis. Most standard hex wrenches are not long enough.

spur gear are attached. An opening in the bottom of the aluminum mount allows the spur gear to be mounted as low as possible. In fact, the spur gear is almost flush with the bottom of the chassis. To mount the motor, Tamiya includes an extra-long 2.5mm hex wrench to install the lower motor-mounting screw (see "Building and Setup Tips"). Even with the special tool, it took me several tries to get the tool through the side of the chassis, the center strengthening rib and into the motor without having the screw and washer fall off of the wrench.

The spur gear is mounted on a layshaft with the front and rear pulleys that drive the belts. Located at the front and rear are identical adjustable ball differentials with plastic outdrives. It is here that the belt tension can be adjusted. Non-concentric diff-bearing holders can be rotated to loosen or tighten the belt. Spanning the distance between the diff outdrives and wheels are steel dogbones, and every component of the drivetrain spins on quality metal-shielded ball bearings.

mini test

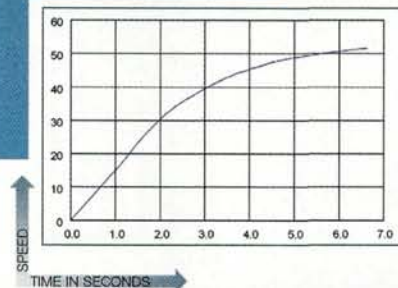
EPIC Shock 7x2

Epic's new Shock modified motors are available in flat- or round-wire armatures for short- and fast-track configurations. The beehive-looking, billet-aluminum endbell is designed for the best possible brush-heat dissipation and a tighter fit to eliminate brush bounce. It also uses extra-long-life silver brushes and standard brush springs. I tested the TA05 with a wild 7-double wind, which cranked the Ferrari up to 51.6mph. Who says you need nitro power to go fast?

› Speed and acceleration will vary with gearing, vehicle, battery and speed control



RADAR TESTING



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. >	11.5	3.6 SEC. 43.2 MPH
2 SEC. >	45.8	
3 SEC. >	98.1	
4 SEC. >	160.9	
5 SEC. >	230.4	
		Time to top speed
		6.6 SEC. 51.6 MPH
		Top speed
		51.6 MPH

SPECIFICATIONS

MANUFACTURER Tamiya

MODEL Ferrari F430 TA05

SCALE 1/10

PRICE \$165

Varies with dealer

DIMENSIONS

Wheelbase 10.12 in. (257mm)

Width 7.52 in. (191mm)

WEIGHT

Total, as tested 54.56 oz.

(1,547g)

CHASSIS

Type Molded semi-tub

Material Fiber-reinforced,
composite-plastic

DRIVETRAIN

Type Dual-belt 4WD

Primary 22T pinion/70T spur gear

Transmission ratio 2.25:1

Final drive ratio 7.16:1

Driveshafts Steel dogbones

Differentials Ball with composite
outdrives

Bearing type Metal-shielded ball
bearings (drivetrain)/oil-less
bushings (steering bellcranks)

SUSPENSION

Type Lower H-arm with upper
turnbuckle camber link

Shocks Molded-plastic, fluid-filled
with bladder seals

WHEELS

Type Silver, one-piece plastic,
multi-spoke

TIRES

Type Tamiya racing radial with
semi-V-block tread

ELECTRONICS

Transmitter/receiver Not included

Servo Not included

Speed control Not included

Motor Mabuchi 540

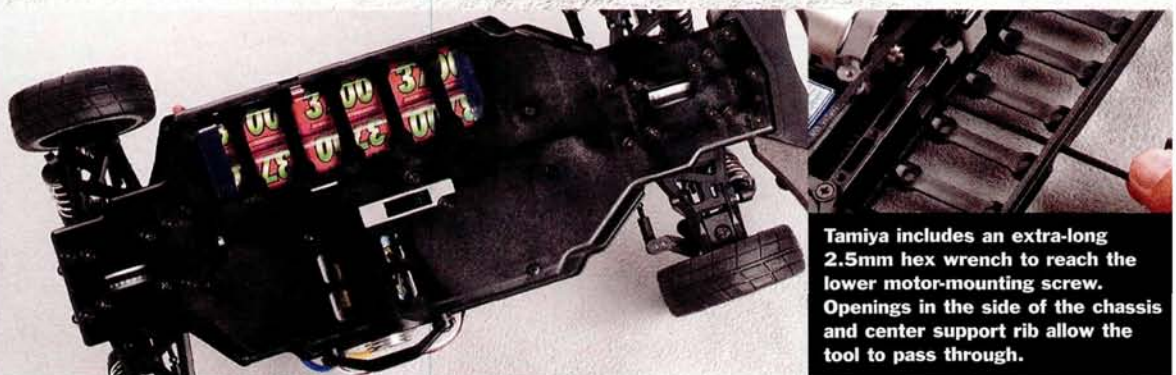
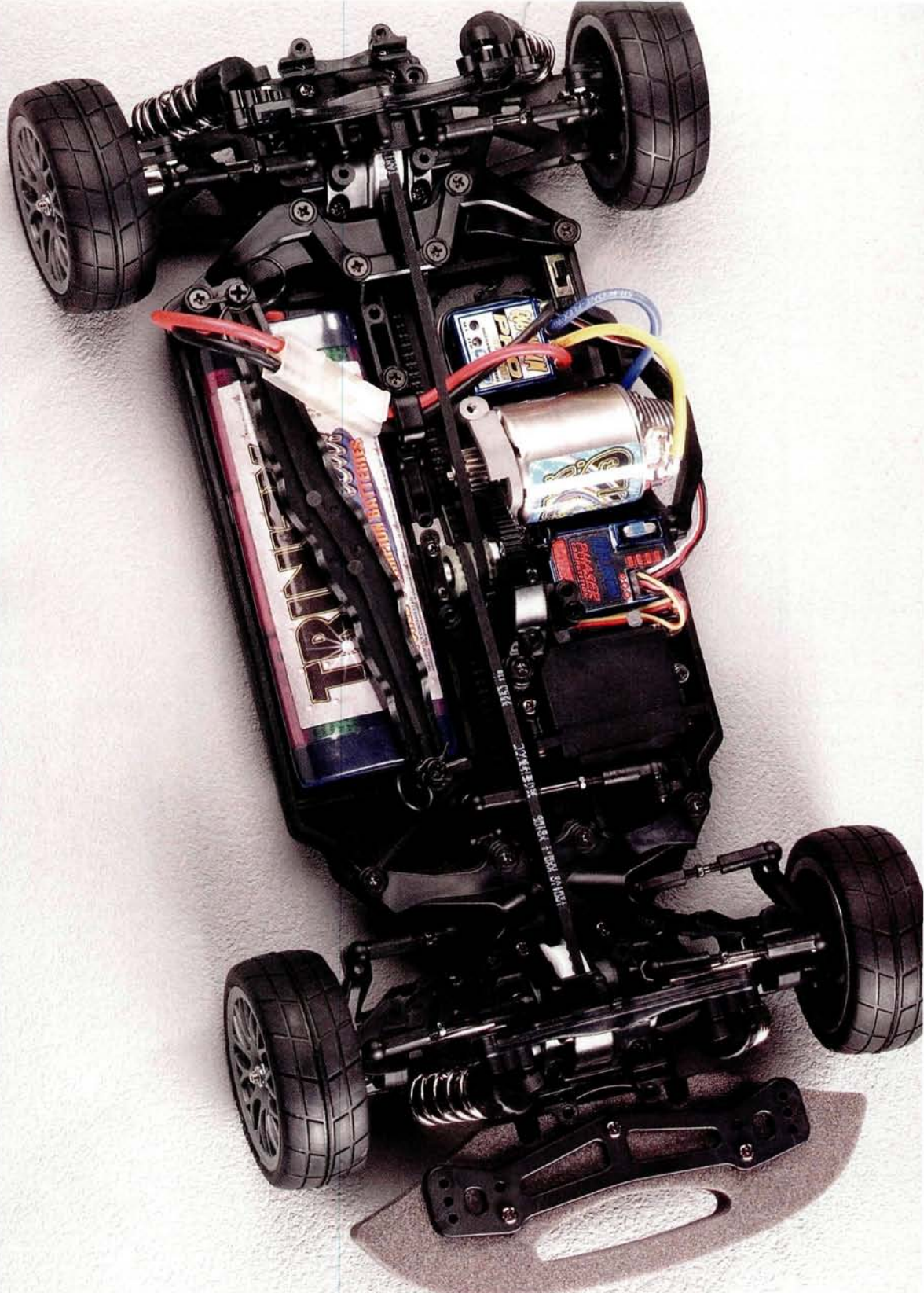
Battery Not included

FACTORY OPTIONS

- Front one-way unit—item
no. 53833
- Center one-way set—53841
- Aluminum motor heat
sink—53837
- Stabilizer set (F & R)—53842
- Aramid drive belt—53843
- Carbon damper stay
(F/R)—53845/53846
- 46mm universal shaft
assembly—53847
- Aluminum racing steering
set—53848

**Partial list; additional option parts
available*

Right: an opening in the chassis
allows the spur gear to be
mounted as low as possible, and
the openings under the diffs let
small stones drop out of the car
instead of getting ingested by
the gears.



Tamiya includes an extra-long
2.5mm hex wrench to reach the
lower motor-mounting screw.
Openings in the side of the chassis
and center support rib allow the
tool to pass through.

SUSPENSION AND STEERING. Tamiya carried over the TA04's proven suspension system that gives you plenty of tuning options and tough construction. Thick lower H-arms pivot on hinge pins captured by plastic pivot blocks, while the outer hinge pins are held in place with E-clips. A 12mm setscrew installed in the suspension arm allows easy chassis-droop adjustments. Front and rear camber links use steel turnbuckles, so you don't have to remove the link to make an adjustment. The only thing, though,



The TA05's suspension uses the same durable and reliable setup as the TA04 that features thick, lower H-arms and upper turnbuckle camber links.

is that the small nut on the turnbuckle and thin stamped-aluminum wrench included in the kit make this adjustment difficult because the wrench easily slips off. A suspension feature normally found on competition-level cars is the in-board vertical ball stud for the camber link. Roll center can be altered by stacking spacers under the stud.

Like the camber links, the toe links and the link between the steering servo and bellcrank use steel turnbuckles. The typical dual bellcrank with plastic drag link gets the car pointed in the right direction, and the whole setup pivots on oil-less bushings. A servo-mounted servo-saver is also included.

Tamiya's plastic, oil-damped shocks are easy to assemble and smooth out the ride well. They feature dual O-rings to seal the shock shafts and a silicone bladder for volume compensation in the cap. The angle of the shock can be changed with six mounting options up front and eight at the rear.

BODY, WHEELS AND TIRES. Like many of Tamiya's touring car kits, the TA05 will be available with several body styles. The first body released for the new chassis is the stunning Ferrari F430 shown here. Tamiya includes a complete set of pre-cut decals to make this Italian super car realistic, and black window decals eliminate the need to do any masking. All I did to end up with the finish you see here is spray on a couple of coats of Tamiya yellow polycarbonate spray paint and then add the decals; that's it. Multi-spoke, one-piece silver wheels nicely complement the Ferrari styling and semi V-block treaded tires with foam inserts hook up well on most surfaces.

HPI Pro 4



Tamiya 415MS



Tamiya TA05



Does Mid-Motor Matter?

Since the motor is one of an electric car's heaviest and most compact components, its placement on the chassis greatly affects handling and balance. To see just how much the TA05's mid-motor layout affects weight distribution, we weighed a rear-motor shaft car and a rear-motor belt car (Tamiya TRF 415MS) along with the TA05 to see how the numbers played out. The scales revealed that the TA05 has a nearly 50/50 weight balance, and that gives it a stable feel at the wheel without feeling lazy. Centering the motor's mass on the chassis also reduces the car's polar moment of inertia, further enhancing responsiveness without trade-offs elsewhere in the handling package. Word has it that Tamiya's factory drivers are already turning faster lap times with race-prepped TA05s; we can see why.

LIKES

- > Silky smooth drivetrain.
- > Quick and easy to build.
- > Responsive handling.

DISLIKES

- > Motor installation requires patience.
- > Larger receivers cannot be mounted directly on the chassis.
- > Steering servo has to be modified for installation.

THE COMPETITION

F430 TA05
 HPI Sprint RTR >> 1/03
 Team Associated RC10 TC4 >> 8/05
 Team Losi Triple-XS 2 >> 5/05
 Traxxas 4-Tec >> 5/98
 Yokomo MR-4TC >> 7/04

FIND IT

>>> Go to page 250 for manufacturers' contact information.

YOU'LL NEED

Transmitter
 Receiver
 Servo
 ESC
 Stick pack
 Charger
 Tire glue
 Paint for body

WE USED

Hitec Aggressor FM
 LRP Phaser
 Hitec HS-311 standard steering servo
 LRP Quantum Pro Reverse
 Trinity VIS-Powered 3700 NiMH
 LRP Pulsar Competition 2
 Pro-Line Premium Blend CA
 Tamiya polycarbonate spray paint



PERFORMANCE

Once the Trinity 3700mAh NiMH battery pack was charged, I headed out to the open parking lot in front of our building to try out Tamiya's newest tourer. With the very first lap, I was immediately reminded of what it was that first got me wanting an RC car—the thrill of driving an ultra-realistic model. The great-looking Ferrari F430 body is just too cool to see it zooming around the parking lot at full clip—power-sliding through turns with high-speed spinouts in the sandy sections.

A Mabuchi 540 motor is included with the kit, but its mild performance won't reveal what this tourer can really do. Out it went and in went Epic's new modified Shock motor. The Shock motor is very powerful and dumped outrageous power into the TA05, making it almost too fast for the parking lot I was testing on. At full speed, the car absolutely ripped across the parking lot and registered a staggering 51.6mph on the radar gun. Dropping in a mod motor alone more than doubles the stock speed, which is around the high teens—how cool is that? Even at these high speeds, the car tracks nice and straight, so it's easy to control. Even when I pegged the throttle from a standing start, it stayed in-line without exhibiting any torque steer. Also, there was no belt-skipping, and the tires did not spin—just nice hard acceleration.

When I assembled the TA05 chassis, I followed the manual to the letter for all of the suspension adjustments, and the car performed very well its first time out. The plastic-body, fluid-filled shocks are no eye-catchers, but they do adequately damp the ride. Depending on the surface you run on, you can easily adjust the shocks by changing out the fluid and springs or adding preload spacers onto the shock body. In stock setup, the shocks are somewhat soft, so they're great for bashing around rough parking lots, which is where I did most of my testing.

I was very impressed with the TA05's stability. It didn't spin out in the corners or when diving through switchbacks. The rear end stayed planted no matter how much throttle input I gave it, yet the car still responds quickly to steering inputs—although it does tend to push. I'm confident that racing rubber would reveal the TA05 to be an aggressive handler. But even with the stock tires, the only time the Ferrari spun out was when it hit sandy patches, or if I railed on the brakes while the front wheels were turned. In many of those instances, I was able to add power, and the car straightened out.

So how did the TA05 hold up to all the testing and sick high speeds? Very well; it survived two very hard hits into a concrete curb during the speed runs, showed only moderate wear on the tires, and belt stretch was minimal.



THE VERDICT

Tamiya created an excellent successor with the TA05. I admit that I was a bit skeptical when I first saw pictures of the new tourer because of the atypical mid-motor layout and semi-tub chassis without a chassis-strengthening upper deck. Now that I have built and tested Tamiya's new ride, my views have changed. The chassis is easy to build and maintain, and that makes it a great first touring car

that's easy to wrench on when racing. The drivetrain is incredibly free-spinning and handles loads of power, as evidenced by the nearly highway speeds the Ferrari hit. The suspension can be easily adjusted to jive with different track conditions, and the chassis proved itself to be quite durable. I would not be at all surprised to see this latest platform from Tamiya dominating the local track. ■

RATINGS

Instructions	●●●●●●●●●●	ㄅ	Typical Tamiya excellence.
Parts fit & finish	●●●●●●●●●●	ㄱ	Only the H-arms required some filing so that the upright would not bind.
Turn-in	●●●●●●●●●●	ㄷ	Pushes with the stock setup, but there's plenty of potential (especially with stickier tires).
Corner speed	●●●●●●●●●●	ㄷ.5	Speed can be rapidly increased in the corner without the TA05 spinning out.
On-power steering	●●●●●●●●●●	ㄷ	Typical 4WD oversteer is evident when using included wheels and suspension settings.

Best buyer>>> Scale fans who appreciate performance and first-time racers who want a touring car that's easy to drive and maintain.

The “affordable” XB8: better spec’d than some “pro” buggies!

XRAY QUICKLY MADE A NAME FOR ITSELF as a “luxury” RC car maker with the release of its T1 line of electric touring cars. “Luxury” ... “Exotic”... whatever you call them, the innovative designs use the best materials and parts that fit as if they were machined or molded with a bit of magic. Last year, the XRAY people released their first off-roader—the XB8, and it quickly became a world favorite. Now they have released a more affordable version—the “XB8R” (the “R” stands for “Raycer,” as in their T1 line). Coming out with a less expensive kit a year after a successful high-end kit goes completely against what most other manufacturers do; it’s usually:

“Get them hooked on the basic kit, and then make them upgrade with an entirely new kit.” But XRAY doesn’t play by the rules of others, and that’s good for consumers. XRAY wants to share the success of its platform with racers who maybe can’t afford the top of the line. And the XB8R appears to be spec’d well enough to be considered a high-end car.



XRAY XB8R

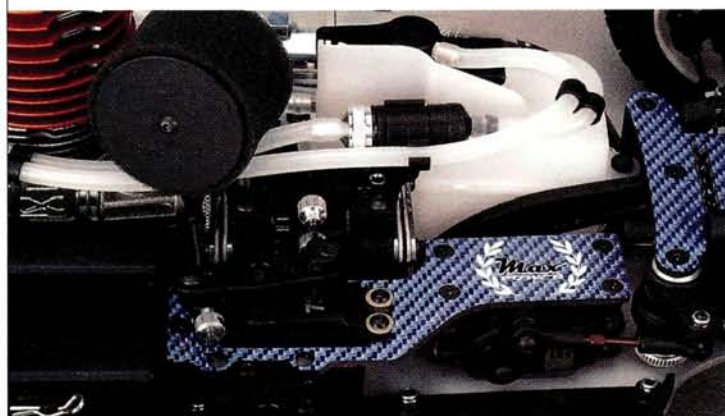


KIT FEATURES

CHASSIS. The chassis plate is a slightly updated version of the one used on the XB8. It has an additional hole for a new optional engine mount. Made of 3mm 7075 T6 aluminum stock, the XB8R's foundation is finished in a very light blue/green and is hard-anodized for durability. As you would expect in a car of this caliber, all the screw holes underneath have been counter-sunk, and the engine-mount holes are milled slots, so the screw heads are flush with the bottom. A cutout for the spur gear allows the center diff mount to sit low on the chassis for a low center of gravity. Instead of the steel and machined-alloy chassis braces the XB8 has, the XB8R has molded-plastic ones. They don't make the chassis as rigid as metal braces do, but a bit of torsional flex can help on rough tracks—and they are cheap to make (and replace, if necessary). Steel locknuts go wherever something is fastened to the chassis, and that completely eliminates the possibility of stripping a plastic screw hole when you build the car or run it hard.

More bracing duties are handled by the front upper plate, the servo tray and the radio-gear box. XRAY didn't skimp on these pieces either; the servo tray is cut out of 2.5mm, silver blue, laminated-graphite stock as is the front upper plate.

DRIVETRAIN. Each of the three differentials is O-ring and gasket-sealed to keep the supplied silicone fluid in there. XRAY provides 7,000WT fluid for the front and center, while the rear



Laydown steering servo, silver-blue graphite, oversized fuel filter Who says this isn't a "pro" car?

mini test

Max Power MX 21 M5

Max Power engines are imported by RC America and tuned by respected Italian motor guru Massimo Fantini. Based on a Novarossi mill, the M5 features a long stroke for low-end torque, a 5-port sleeve, and a turbo crankshaft with a claimed output of 2.6hp. Like most Novarossi-based engines, the MX 21 M5 was very tight before break-in, but it pulls hard down low as it was designed to and still has enough top end for all but the largest tracks. The needle settings are a bit finicky, but once tuned, the engine screams.

► Performance will vary with gearing, vehicle, fuel and test conditions.



BUILDING AND SETUP TIPS

It really is a joy to build anything that comes from XRAY. Having that name on the box means that the parts will fit right, and there will be little, if any, excess material on molded parts. But here are a few things to watch out for anyway:

DIFF ASSEMBLY. Tighten the screws that hold the diff-case halves together in a criss-cross pattern rather than going all around the case. This will prevent you from warping the diff case, which might then wobble and wear your outdrive bearings.

ENGINE MOUNTS. We've said it before and we'll say it again: use thread-lock on any metal fasteners that go into metal, especially the engine mounts. If the engine slips its gear mesh during a run, say bye-bye to your clutch bell.

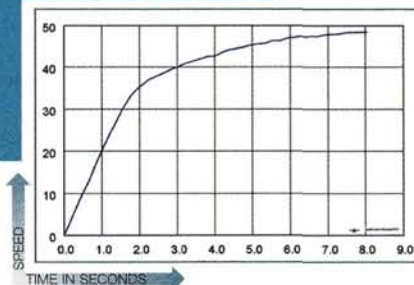
ENGINE MOUNTS, PART 2.

XRAY came up with a way to install metal pivot balls in open plastic ball ends that's simple and amazing. Just grab the engine mount that comes in bag 3 (the other is in bag 9), and use it with a 3mm screw to install the balls without marring them with pliers. Look for that in the instruction sheet.

STEERING SERVO. Some taller servos, for example, the Airtronics 358 I used, could rub on the front drive shaft. Put washers between the servo ears and the servo mounts to space the servo away from the center of the chassis.

gets 1,000WT. Inside, the diff gears are heat-treated machined steel, and the diff housings have steel inserts to support the load of the outdrives so that they'll run true longer. The center diff is mated with a pair of constant-velocity-style driveshafts made of Hudy's famed spring steel; in fact, all six rebuildable driveshafts are made of the same material, and they have holes drilled every 90 degrees in the universal hub so that if you wear out one set of holes, you have others ready to use. Details such as these have helped XRAY to earn its great reputation in such a short time. The brake plates are made of precisely machined steel (not stamped) and have fiber shoes that have to be CA'd into place. There are only two brake discs (one on each side of the center diff mount), but they're vented steel and machined with the utmost care.

RADAR TESTING



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. > 15.1	3.3 SEC.	41.7 MPH
2 SEC. > 58.2		
3 SEC. > 114.1	Time to top speed	Top speed
4 SEC. > 178.3	7.9 SEC.	48.2 MPH
5 SEC. > 242.1		

SPECIFICATIONS

MANUFACTURER XRAY

MODEL XB8R

DISTRIBUTOR RC America

SCALE 1/8

PRICE \$500

Varies with dealer

DIMENSIONS

Wheelbase 12.6 to 12.9 in.

(321 to 327mm)

Width 12.1 in. (308mm)

WEIGHT

Total, as tested 118 oz. (3,350g)

CHASSIS

Type Milled plate with rolled edges and front kick-up

Material 3mm-thick 7075 T6 hard-anodized aluminum

DRIVETRAIN

Type Shaft-driven 4WD

Primary 13T clutch bell/44T spur gear

Transmission ratio 3.33:1

Final drive ratio 11.27:1

Driveshafts Spring steel universals

Differentials Sealed, silicone-filled, 6-gear diffs w/spring-steel outdrives

Bearing type Blue Seal rubber-sealed ball bearings

SUSPENSION

Type (F/R) Lower H-arm with adjustable upper A-arm/Lower H-arm with adjustable upper link

Shocks Hard-anodized aluminum-body with bladder seal and preload spacers

WHEELS

Type Split 6-spoke, 17mm hub

TIRES

Not included

ENGINE & ACCESSORIES

Engine Not included

Clutch 3-shoe aluminum

Manifold Not included

Pipe Not included

Fuel tank 120cc with mesh filter

ELECTRONICS

Not included

FACTORY OPTIONS

- Front brace (7075 T6 5mm)—item no. 352086
- Rear brace (7075 T6 5mm)—353085
- Front shock tower (7075 T6 4mm)—352090
- Rear shock tower (7075 T6 4mm)—353090
- Eccentric steel bushing (0 deg.)—352170
- Eccentric steel bushing (1 deg.)—352171
- Eccentric steel bushing (2 deg.)—352172



With the exception of the Max Power engine and pipe combo and Pro-Line Knuckles 2.0 tires, the XB8R builds up just like the buggy you see here.

XB8 VS XB8 RAYCER

Wondering what the differences are between the standard XB8 and the Raycer model? Here's the lowdown. If it isn't on this list, the feature is the same for both cars.

FEATURE	XB8	XB8R
I.A.C.	Adjustable steel inserts	Fixed plastic inserts
Radio plate	Black graphite	Blue graphite
Front upper plate	Black graphite	Blue graphite
Brake plate brace	Black graphite	Plastic composite
Shock towers	4mm 7075 aluminum	3mm 7075 aluminum
Driveshafts	Universal (6)	CV-style (6)
A-arms	Hard, short	Soft, long
Chassis braces (F/R)	Aluminum	Plastic composite
Suspension blocks	7075 aluminum	Plastic composite
Flywheel	Hard-coated aluminum	Aluminum
Engine mounts	Finned aluminum heat sink	Aluminum
Fuel filter	Aluminum	Plastic composite

The standard 17mm axles are made of light aircraft aluminum to lower the car's rotating mass. And, of course, every component that rotates is supported by rubber-sealed ball bearings—even the steering posts.



Blue-seal bearings and Hudy spring-steel drive axles with CV-style joints are standard. Note the extra cross-pin holes; when one set wears, you can just move the pin over to the fresh holes.

ENGINE AND ACCESSORIES. An engine isn't included, but all the support gear required to install one is in the box. Two solid aluminum blocks act as engine mounts and double as handy, ball-end installation tools (as noted in the manual). The XB8R doesn't have the hard-coated flywheel that its big brother has (a standard, machined-aluminum one has to do the job), but it does get the trick, aluminum, clutch-shoe setup with medium-stiff springs and a 13-tooth clutch bell. The 120cc fuel tank features a mesh filter and a shield that directs excess fuel away from the drivetrain. Additionally, a large-capacity molded fuel filter is mounted on the center diff support, and a large, dual-stage air filter with filter oil is included.

SUSPENSION AND STEERING. Up front, the XB8R uses a tried-and-true lower H-arm/upper-wishbone C-hub setup. The arms are made of a slightly softer material than the standard XB8 ones and are slightly longer. This isn't a downgrade (the harder arms cost the same), but the design is targeted at racers who are more likely to crash than the pros are. Roll center can also be altered with a combination of eccentric pin holders at the inner wishbones and two upper mounting locations on the C-hub. The 4mm inner hinge pins for the H-arms are secured with E-clips and supported by molded holders that can be replaced to alter kick-up. In the rear, the setup is a very traditional, foolproof, lower H-arm/upper camber link layout. The rear uprights can be set forward or backward to change the wheelbase, and the upper links can be set in any of 21 positions (seven on the tower; three on the upright) for roll-center adjustments. Like the front suspension, the inner hinge pin mounts for the arms are molded and can be replaced to alter anti-squat and rear toe. The composite-plastic steering knuckles have threaded metal inserts. They are molded

LIKES

- Locknut inserts in stressed molded composite pieces.
- Rebuildable center CV-style driveshafts.
- Extensive tuning options.
- Excellent fit and finish.

DISLIKES

- Integrated Adjustable Caster parts aren't included.
- Shock bodies use clip-on spacers instead of threaded collars.
- Engine mounts could have more surface area for cooling.

FIND IT

➤➤➤ Go to page 250 for manufacturers' contact information.

THE I.A.C. OPTION

One item not offered with the Raycer is XRAY's Integrated Adjustable Caster system, or I.A.C. The design offers the benefits of simple caster adjustments (like a pivot-ball setup) with the durability of C-hubs. With I.A.C., you can alter caster without replacing the C-hub. Instead, an eccentric hinge pin holder is inserted into the lower arms to alter caster. The hinge pin's front end is set in a mount that can pivot upwards and downwards, while its rear end can be raised or lowered, depending on the insert used and its orientation. I think that XRAY could have included molded versions of the steel holders at very little extra cost, but for now, I.A.C. is strictly optional.

in place and practically guarantee that you won't strip a kingpin screw or even lose one, since the ends of the screws thread into the composite material that holds them in place. The shock towers at both ends are made of more of that 3mm 7075 T6 aluminum stock, but they aren't hard-anodized. With 8 front and 10 rear mounting locations for each shock, and 3 lower mounting holes in the arms, there are seemingly endless choices of shock-mounting possibilities.

The XB8R's top-filled shocks feature large, hard-anodized aluminum bodies and are double-O-ring sealed at the shaft exit. Large rubber bladders under the shock cap act as volume compensators, and heavy-duty 3.5mm shock shafts are standard as are a variety of locknut-secured pistons.

The pistons come in three hole sizes with linear or variable damping action. The linear pistons have holes drilled straight through them, while the variable-rate pistons have small funnel-shaped holes that allow the shock oil to pass through them more easily in one direction than the other; the shocks can therefore be set up to have higher damping when compressed and less damping when they rebound (or flip them over for the opposite effect). Rubber shaft boots held in a groove at the bottom of the shock body further prevent dirt from getting past the shock seals at the shaft entrance. A 2.4mm swaybar in the front and a 2.8mm swaybar in the rear help to keep the chassis flat in hard turns.

BODY, WHEELS AND TIRES. Like the XB8, the XB8R has the popular Pro-Line Racing Crowd Pleazer MBX-5 body with window masks. I had Wade Brown, an up-and-coming airbrush artist whose work is gaining much attention on the Left Coast, do the sleek paint job for me. The white molded wing is secured to adjustable wing mounts that allow its angle and its position to be adjusted fore and aft with two screws secured by locknuts. The kit's white wheels are a kind of split, 6-spoke design that's light and strong. Tires are not included.

YOU'LL NEED

WE USED

Radio	Multiplex ProfiCar 707
Engine	Max Power MX 21 M8
Pipe & header	Max Power MX 02017
Steering servo	Airtronics 94358
Throttle servo	Airtronics 94737
Receiver pack	Trinity NiMH side-by-side
Tires	Pro-Line Racing Knuckles 2.0 XTR
Fuel	Byron Originals 30%





PERFORMANCE

I started by breaking in the 8-port Max Power race-tuned engine—nothing exciting there but, like most Novarossi-based engines, it was very tight even after five break-in runs. During these runs, I noted that the XB8R has lots of steering.

The Hot Rod Hobbies track (Saugus, CA) was hard-packed but covered with dust and pebbles left after the night before's racing. There, I discovered that I had way too much steering. Following Joel Johnson's advice, I set the steering dual-rate on my Multiplex radio to turn the wheels just enough to be able to maintain speed in the tightest turns. The track is rather tight, so it gave me a chance to see just how responsive the XB8R chassis can really be. With the stock setup and the recommended settings for ride height and camber, the car felt a bit "on edge," but it was certainly controllable. It didn't show any tendency to push and was very planted at all speeds; the Knuckles 2.0 tires helped, too. The car hooked only when I grabbed too much throttle in the loose stuff (powerful engine). With every tank, I gained confidence and cut tighter lines and knocked time off

my laps. Ruts didn't bother the car; the suspension soaked them up, and the car drove almost as if they weren't there. The track has a small double closely followed by a quad, and if I accelerated full-on from the back of the double, I cleared the quad without any trouble. Of course, that didn't happen every time, but when I overshot the double, the XB8R's responsiveness and midair handling made it easy to use my backup plan: I turned the quad into a triple single and made it look as though I meant to do it that way. As for the brakes, I have never driven a nitro off- or on-road car with binders as consistent and fade-free run as those on this car. This certainly gave me the confidence to push it harder late into the turns and get the edge over the other cars. After graciously accepting compliments on how good the XB8R looked on the track, I wondered, just for a second, whether people were complimenting my skills or the car. Maybe no one saw me doing cartwheels on a botched jump. I say the car deserves the credit because it also held up well during my aggressive testing—not one broken part.

THE VERDICT

An affordable version of a top-line racer, the XB8R is impressive and includes just about all the ingredients to let drivers at a competitive level run very well. I do think that XRAY could have taken one extra step and provided a less expensive version of the I.A.C. system. After all, that's a major design feature on the original XB8 kit, and they tease us by not even including plastic bits to let us take advantage of it. But enough complaining; the car

handles better than a good chunk of the top-line race kits right out of the box—and at a pretty competitive price. Some of the cost-cutting features, for example, the molded braces, actually work better on some tracks than the more expensive options. And the quality of the kit is second to none. Overall, having this XB8R feels like getting a Porsche at a VW price. ■

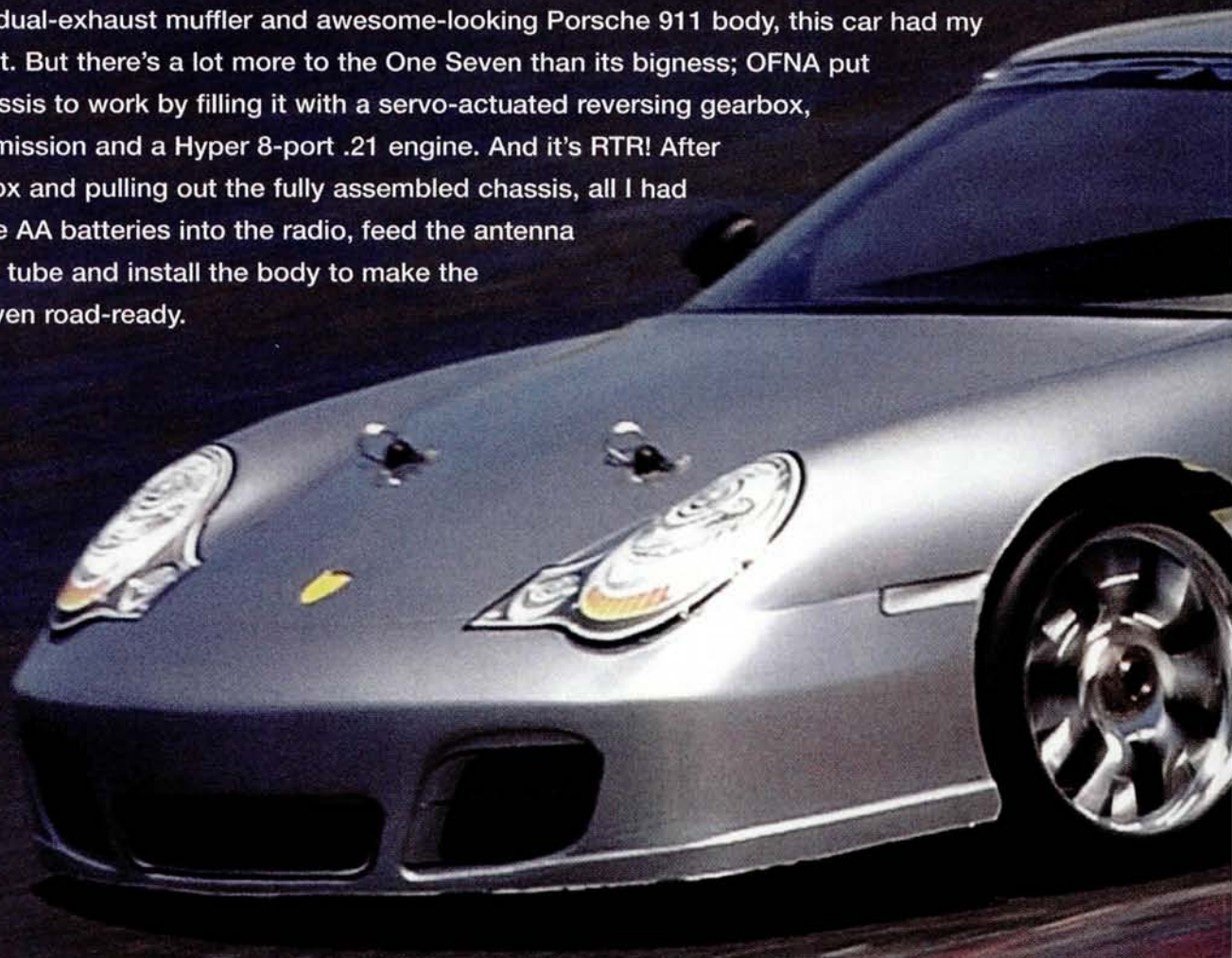
RATINGS

Instructions	●●●●●●●●	10	The quality of the diagrams and step-by-step instructions is among the best in the industry.
Parts fit & finish	●●●●●●●●	10	Again, XRAY sets the standard against which we compare all others.
Turn-in	●●●●●●●●	9	Stock settings allow on-the-edge driving that, with good driver skills, can mean fast laps.
Corner speed	●●●●●●●●	8.5	The chassis rolls smoothly, is well planted and carries speed through the corners.
On-power steering	●●●●●●●●	8.5	Very good on-power steering that's partially the result of the anti-squat settings.
Braking	●●●●●●●●	10	Smooth, consistent and strong. It's slop-free, and the shoes are arguably the best ever on a nitro car.
Bump handling	●●●●●●●●	9	Stock damping feels a bit soft but is great on my track; rough sections weren't a problem.
Jumping	●●●●●●●●	9	Good weight distribution has the XB8R jumping flat and with excellent in-air response.

Best buyer>>> Any competition-minded driver in the market for a new nitro-buggy kit.

OFNA hits the street with a big-scale, 2-speed, reverse-shifting road machine.

I CAUGHT MY FIRST GLIMPSE of the OFNA One Seven 1/7-scale 4WD nitro touring car at the '04 RCX show in Anaheim, CA. With its superlong wheelbase, 2-speed reversing transmission, rear-mounted dual-exhaust muffler and awesome-looking Porsche 911 body, this car had my name all over it. But there's a lot more to the One Seven than its bigness; OFNA put the roomy chassis to work by filling it with a servo-actuated reversing gearbox, 2-speed transmission and a Hyper 8-port .21 engine. And it's RTR! After opening the box and pulling out the fully assembled chassis, all I had to do was slide AA batteries into the radio, feed the antenna through the its tube and install the body to make the Hyper One Seven road-ready.





OFNA
HYPER
ONE SEVEN

KIT FEATURES

CHASSIS. An extended, 3.5mm aluminum chassis gives the One Seven its extra-long wheelbase. The chassis is fully countersunk, and the sides are radiused to increase rigidity and reduce chassis scrape in the corners. The chassis has many openings to reduce weight, and an opening under the flywheel provides bump-start access. Huge front and rear foam bumpers protect the chassis and suspension in a crash. The foam bumpers are sandwiched between upper and lower plastic mounts to keep them in place, and the rear bumper has a convenient handle for easy transportation.

The steering, reverse-shift and throttle/brake servos are installed on an anodized-aluminum servo tray, and the receiver and 4-cell battery holder are installed side by side in separate compartments. The receiver is housed inside a sealed box to protect it from the elements, and the battery holder is secured to a plastic mount for easy access. The body is securely mounted on six adjustable body posts (two each for front, rear and side). A padded, center platform is installed over the front shock tower to support the large hood sections of the 1/7-scale bodies, and it's adjustable to accommodate different body styles.

DRIVETRAIN. The One Seven's buggy-based shaft-drive 4WD system is rugged and smooth. The front and rear bevel-gear differentials are straight out of the Hyper 7 buggy, so they should handle the pavement duty well. The diffs are greased at the factory, but they're sealed so you can fill them with silicone diff fluid for track tuning. The hard steel ring and pinion gears are just about bulletproof, and the gear mesh was perfectly set on our test sample.

A 2-speed transmission with steel spur gears and a rugged pawl-type clutch is mounted on the center of the chassis between a pair of bearing blocks. A compact reversing transmission is installed in front of the 2-speed, and the two systems are linked together with a common layshaft. The auxiliary servo installed between the steering and throttle servos operates the shift lever and changes between forward and reverse drive at your command.

Thick, extra-long dogbones link the diffs to the transmissions; chrome-steel universal driveshafts spin the front wheels, while steel dogbones drive the rears. The entire drivetrain spins on rubber-sealed bearings for smooth, maintenance-free performance. A dual-disc brake system with large-diameter brake rotors and padded steel pads provides right-now stopping power.

SUSPENSION AND STEERING. The One Seven features a completely adjustable pivot-ball suspension. The front steering

INCLUDED ELECTRONICS & ACCESSORIES

OFNA TX-2 3-CHANNEL TRANSMITTER

The TX-2 transmitter is rugged and reliable and feels comfortable in your hand. The steering and throttle trims and reverse switches were perfectly set on our test sample, and I like that the radio has a steering dual-rate knob to adjust the amount of steering throw. The forward

and yanks on the brake linkage. Another SX-001 operates the reverse lever. The SX-002 high-torque servo with 80 oz.-in. of torque has no problem controlling the One Seven—even at full speed.

ACCESSORIES

The One Seven includes a 500cc fuel bottle and an



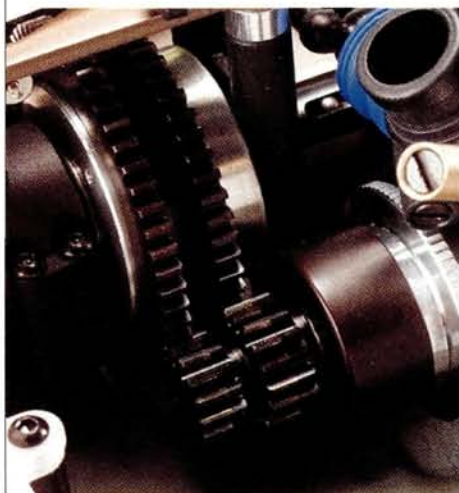
and reverse switch is conveniently located above the thumb grip, but it's recessed to prevent accidental shifting during high-speed running

alkaline-powered glow igniter with clamping tip. These items are necessary to start and refuel the car, and it's great that OFNA includes them. The One Seven also includes wheel and glow-plug wrenches and a set of hex-wrenches to work on the car.

OFNA SX-001 AND SX-002 SERVOS

An SX-001 standard servo opens and closes the throttle

knuckles are attached to the upper and lower wishbones with shiny steel pivot balls. Front camber and track-width adjustment is accomplished by tightening or loosening the pivot balls. Caster adjustment is possible by sliding the upper wishbones forward or rearward on the hinge pins; clip-on spacers provide easy and precise adjustment. The rear hub carriers are attached



Left: the 2-speed transmission has steel spur gears for extra durability, and the shift point is completely adjustable. A steel 2-speed clutch bell covers the installed 3-shoe racing clutch.

Right: the Hyper 21 8-port engine is fast and reliable. The tall, purple-anodized cooling head effectively keeps the engine running cool, and the triple-needle carb allows precise tuning. Check out the finned engine mounts—nice touch.



SPECIFICATIONS

MANUFACTURER OFNA
MODEL Hyper One Seven
SCALE 1/7
PRICE \$799
Varies with dealer

DIMENSIONS

Wheelbase 15.62 in. (396.7mm)
Width 12.06 in. (306.3mm)

WEIGHT

Total, as tested 158.03 oz.
(4,477g)

CHASSIS

Type Stamped plate with plastic braces
Material 3.5mm hard-coated aluminum

DRIVETRAIN

Type Full-time, shaft driven 4WD
Primary 13/17T clutch bell/56/52T spur gears
Transmission ratio 3.61:1
Final drive ratio (1st/2nd) 15.5:1/11.01:1
Drive shafts (F/R) Universal joint/dogbone
Differential Bevel-gear type, grease filled
Bearing type Rubber-sealed

SUSPENSION

Type (F/R) Pivot ball/pivot ball lower, turnbuckle upper link
Shocks Hard-coated aluminum shocks

WHEELS

Type Chrome multi-spoke

TIRES

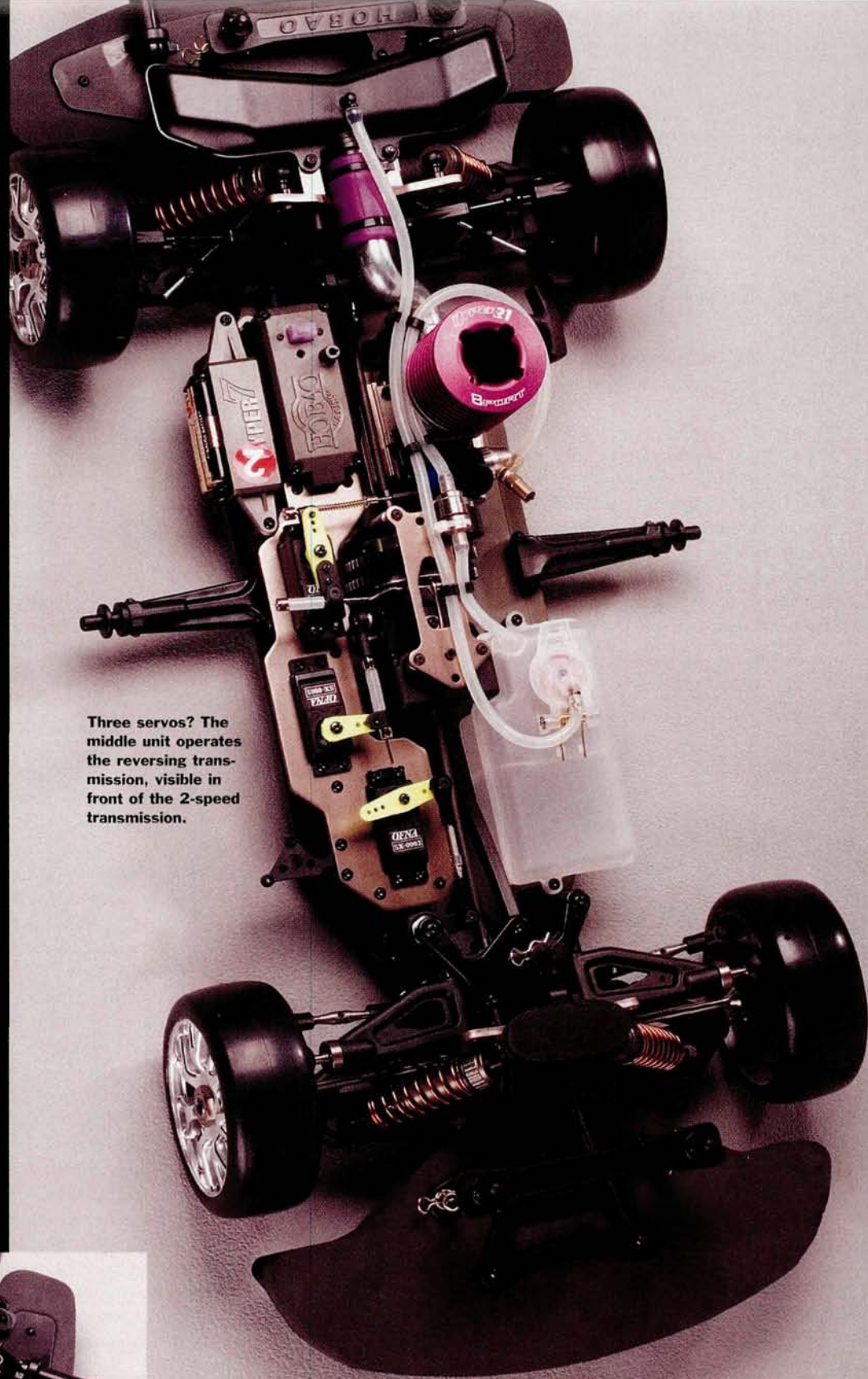
Type (F/R) Rubber slicks

ENGINE AND ACCESSORIES

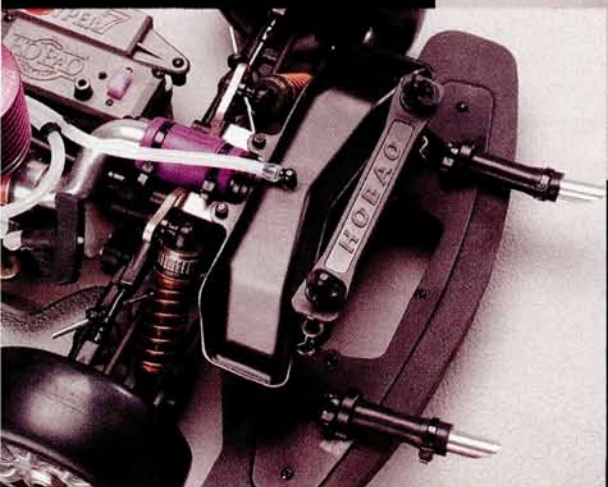
Engine OFNA Hyper 21 8-port
Carburetor 3-needle slide
Clutch 3-shoe
Exhaust Tubular header and rear-mounted, dual-exhaust muffler
Fuel tank 260cc
Starter Pull-start

ELECTRONICS

Transmitter OFNA TX-2 AM 3-channel
Servos SX-001 (throttle & shift), SX-002 (steering)



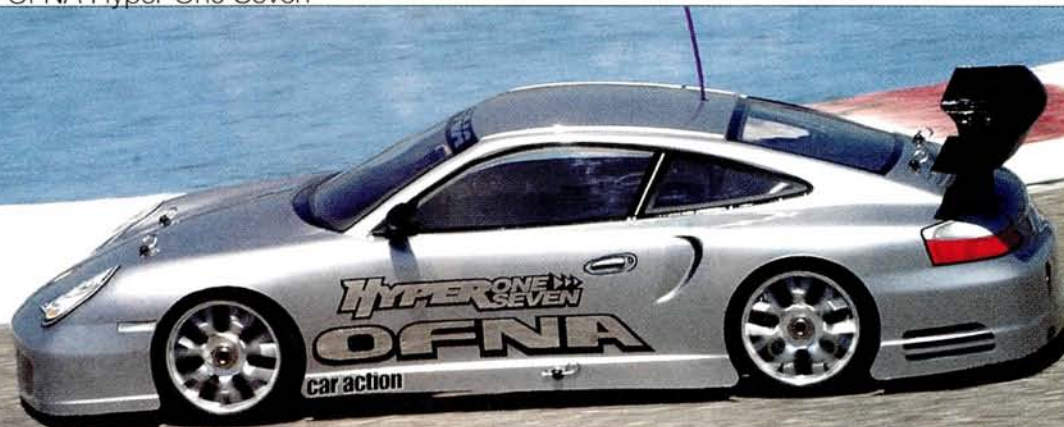
Three servos? The middle unit operates the reversing transmission, visible in front of the 2-speed transmission.



Left: the aluminum dual-exhaust muffler is mounted behind the rear shock tower. The rubber extensions and chrome-plated plastic tips exit out the back of the body, which looks realistic, and it directs the greasy exhaust fumes out the back of the vehicle.

Right: the receiver is housed in a sealed box to protect it from the elements. Two battery mounts are included with the One Seven, one for the 4-cell battery holder and another for a 5-cell rechargeable battery pack.





to the lower H-arms with two bottom-mounted pivot balls. This setup allows fine rear toe-in and track-width adjustment, while turnbuckle upper links let you adjust camber.

Oil-filled shocks provide the bump control. The shocks have hard-anodized aluminum bodies and thick, 3mm shafts. Double O-ring seals keep the oil inside the shock bodies, while rubber diaphragms provide volume compensation. The shocks are attached to 4mm anodized-aluminum shock towers. The bronze anodizing matches the servo tray, the steering swing rack and

the center-transmission upper plate perfectly, and the towers have three mounting options for the shocks. The rear shock tower has three upper rear camber-link mounting options to adjust roll center.

Front and rear adjustable swaybars limit chassis roll in the corners. A conventional

dual-bellcrank steering system with a built-in adjustable servo-saver and an aluminum swing rack pivots smoothly on bushed steel posts. The steering system is braced by a molded upper plate that also serves as an anchoring point for the front chassis brace.

ENGINE AND ACCESSORIES. The powerful and reliable Hyper 21 8-port, pull-start engine gives the One Seven plenty of scoot. The Hyper 21 has all the good stuff, including ABC construction for long piston and sleeve life, a big purple-anodized cylinder head to keep it running cool and a 3-needle slide carb for precise tuning. A factory-lubed air filter provides clean air for the carburetor while the exhaust exits through a tubular, cast-aluminum header. The header has a fuel pick-up mounted underneath so that unused fuel can drain through the attached fuel line and out through the bottom of the chassis.

The dual-exhaust muffler is one of the One Seven's coolest features. The aluminum muffler is mounted just behind the rear shock tower, and the dual-exhaust, chrome-plated plastic tips with rubber extensions exit out the back of the body. This not only looks scale, but the greasy exhaust fumes are also directed out at the back of the body to keep the chassis and body cleaner.

A gigantic, 260cc fuel tank keeps the engine running for 20 minutes between refills. The tank has a cap-mounted pressure tap to reduce fuel foaming and an internal stone fuel filter; a small in-line fuel filter is also included to prevent dirt and other small particles from entering the carb. A 3-shoe racing clutch is attached to a lightweight aluminum flywheel, and the steel 2-speed clutch bell spins on rubber-sealed bearings.

BODY, WHEELS AND TIRES. The slick-looking One Seven chassis is topped off with an equally sweet body. Choices include a Ferrari 360, a Lamborghini Murcielago or a Porsche 911 body (all three are shown in this article). The bodies are not only big, but they're scale-looking, too. They arrive painted and trimmed and include plastic side mirrors and wing mounts for added detail. The multi-spoke chrome wheels look great, and the slick tires with foam inserts hook up well on asphalt and cement.



Above: pivot balls allow camber and track-width adjustment, while turnbuckles adjust toe-in. The hard-coated aluminum shocks hold plenty of oil to keep the One Seven composed on bumpy surfaces.



Right: the rear suspension uses bottom-mounted pivot balls that allow toe-in and subtle track-width adjustment. Turnbuckle upper links adjust camber.

TUNING

BETTER BODY FIT

Tighten the pivot balls a couple of millimeters to make the front and rear ends narrower. This will provide more wheel clearance inside the wheel wells.

LIKES

- › Fast and handles great.
- › High-torque steering servo.
- › Rear-mounted muffler.

DISLIKES

- › No electric starter.

FIND IT

›› Go to page 250 for manufacturers' contact information

YOU'LL NEED

Fuel
12 AA batteries
C battery

WE USED

Trinity Monster
Horsepower 20 percent
Sanyo 2500mAh
Duracell



PERFORMANCE

After I primed the carb, the Hyper 21 engine fired up with the first couple of tugs on the pull-start rope and went into a steady idle. I ran the car around slowly for the first couple of tanks before I started to adjust the carburetor. By the third tank, I had the engine making good power, and the One Seven was screaming up and down my street. The 2-speed tranny was set perfectly at the factory; it shifted into high gear at the precise moment the engine got on the pipe.

I immediately noticed the One Seven's lightning-fast acceleration. The big touring car has explosive get-up-and-go, and the speed just kept climbing as it shifted into second gear. The One Seven topped out at 45mph once I had tuned the carb for performance. That's a respectable speed for a lightweight 1/10 touring car and just plain impressive for the 9-pound One Seven.

Bringing the car to a halt was not an issue thanks to the super-effective disc-brake system with monster-truck-size twin brake rotors. The One Seven stops on a dime, but the brakes are smooth and easy to modulate. The effective brake system gave me the confidence to push the One Seven to the limits of speed without having to worry about not being able to slow down.

Cornering is another area that the One Seven excels in. The big car turns in beautifully with a slight push under power. Steering at lower speeds is sharp, yet the car has no problems maneuvering in tight places. I had a blast pitching the One Seven into tight corners and listening to the tires squeal as they grabbed for traction. Performing controlled 4WD drifts in the corners is easy, and the One Seven slides very neutrally, which makes controlling

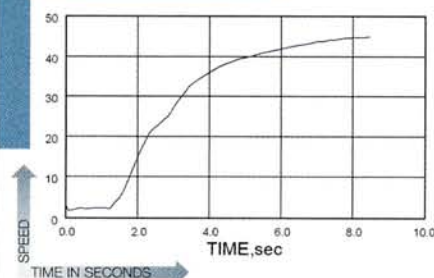
the angle in the corners a piece of cake.

The giant body looks great and provides a realistic driving experience. The front and rear swaybars reduce body roll, but the body still leaned a bit in the corners, which added scale realism. The extra ground clearance and well-damped suspension allow the One Seven to drive over cracks and bumps in the road without getting out of shape. I flew over sewer caps and lane reflectors at full speed, and the suspension just soaked up the bumps and the car continued to track straight. The smoke exiting out at the back of the vehicle also contributed scale realism and kept the greasy fumes away from the body and chassis; the chassis was a bit dusty after being driven for a couple of hours; it took just one blast with the air compressor to get it squeaky clean.

The 260cc fuel tank provides around 20 minutes of run time, and that means you can drive the One Seven for an hour with only three fuel stops. The One Seven is so stable and predictable that I never had to use the reverse function. I had to test it, so I flicked the switch on the transmitter, and the tranny shifted into reverse without a hitch. The reverse tranny does not have a clutch, so you have to bring the vehicle to a halt before shifting into reverse to avoid damaging the tranny.

Nothing bent, broke or came loose during testing, and the engine was fast and reliable. I didn't run the One Seven into any obstacles, but the oversize suspension components and buggy-style drivetrain should prove to be very durable. The One Seven is an exciting vehicle to drive, and the exotic-looking chassis makes it the star of any RC garage.

RADAR TESTING



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. > 13.2	3.7 SEC.	39.1 MPH
2 SEC. > 45.7		
3 SEC. > 93.4	Time to top speed	Top speed
4 SEC. > 149.6	7.5 SEC.	45 MPH
5 SEC. > 209.7		

Note: the Hyper One Seven's rear-facing exhaust caused a rolling-start error in the acceleration curve, visible as the "flat spot" at the beginning of the curve. The time to distance/speed data has been corrected to account for the rolling start.

THE VERDICT

I had a blast testing the One Seven and can't wait to drive it again. With its scale-looking body and feature-packed chassis, the One Seven is almost as much fun to look at and work on as it is to drive. I really like the oversize fuel tank because it provides superlong run times, and the rear-mounted dual-exhaust muffler is just plain awesome. The One Seven isn't cheap, but the long list of hot features makes it a bargain in my book. OFNA did a great job designing the One Seven, and I believe that anyone who is lucky enough to own one will hang on to it for a long time. I'm already thinking of ways to hop it up, so keep reading; you might see a Hyper One Seven project appear in the mag soon. ■



RATINGS

Instructions	●●●●●●●●●● N/A	A manual was not available at press time.
Included electronics	●●●●●●●●●●	Good AM radio gear. The high-torque steering servo is a bonus.
Parts fit & finish	●●●●●●●●●●	First-rate assembly, and the electronics and fuel tubing are routed nicely.
Turn-in	●●●●●●●●●●	The Hyper One Seven steers aggressively at low to moderate speeds.
Corner speed	●●●●●●●●●●	Holds a tight line in the corners, and the rear end stays locked in.
On-power steering	●●●●●●●●●●	Slight push under power.
Braking	●●●●●●●●●●	The brakes feel solid and provide consistent performance.

Best buyer>>> Any on-road, nitro-power driver.



2005 IFMAR 1/10th Electric Off Road World Championships

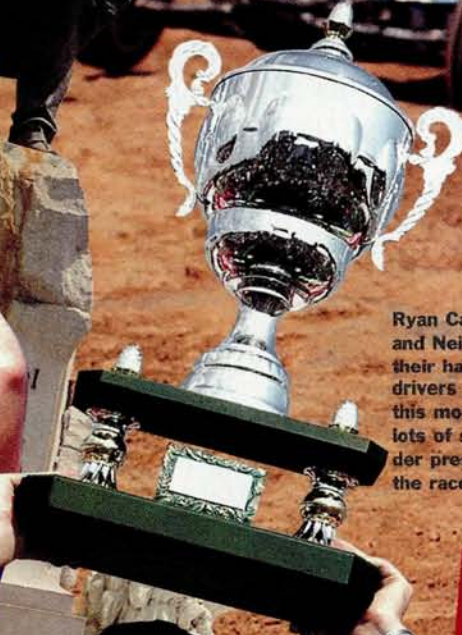
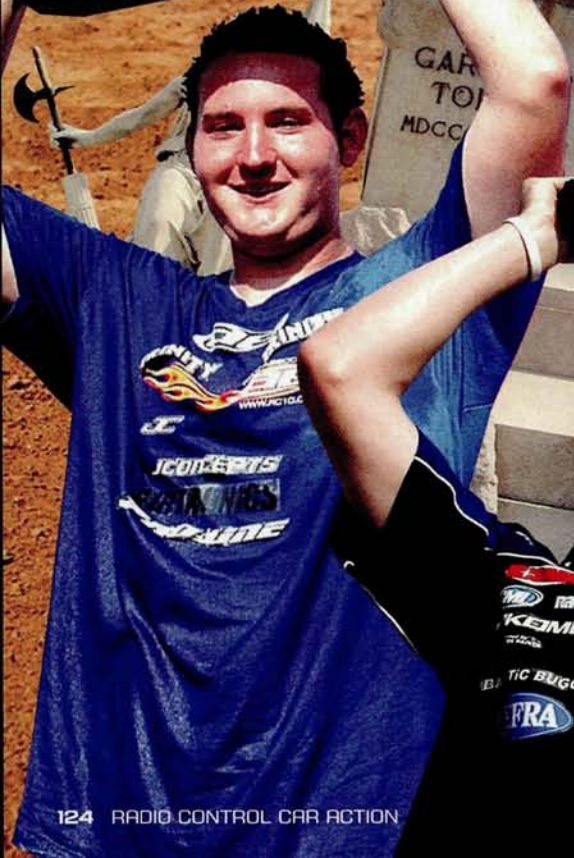
KYOSHO
THE FINEST RADIO CONTROL MODELS



KYOSHO
THE FINEST RADIO CONTROL MODELS

RACE SPECS

Location: AF Models Rings » Collegno, Italy » afmodels.com
Primary sponsors: GP Batteries » Kyosho » Team Orion
Secondary sponsors: Team Much-more » NOSRAM
Classes: 4WD Modified Buggy » 2WD Modified Buggy
Qualifying: IFMAR-style, best 3 out of 5 rounds
Mains: Triple A-mains
Handout tires: 4WD: Losi Blockhead red (front), Losi X2000 red (rear). 2WD: Pro-Line Hole Shot LP M3 (rear); drivers could select any front tire.



Ryan Cavalleri (left) and Neil Cragg hoist their hardware. Both drivers prepped for this moment by doing lots of seated shoulder presses before the race.



HOW IT ALL WORKS

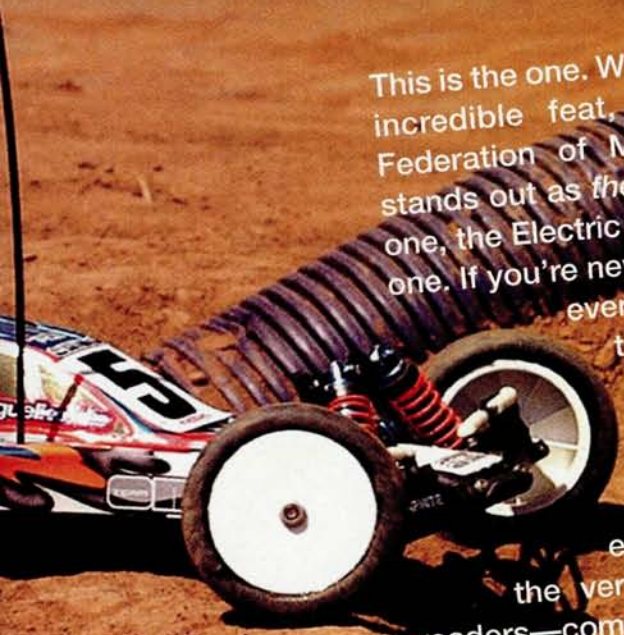
The Electric Off-Road Worlds consists of only two classes: 2WD and 4WD. The 4WD class runs first, and after a single day off, 2WD is run. The schedule for both classes consists of eight rounds of controlled practice in which the last round is used to seed qualifying (it's kind of like qualifying for qualifying). To place drivers in Mains, IFMAR uses a points system during qualifying. Five rounds are run but only a driver's best three rounds are counted. The fastest driver from each round is awarded the most points. When qualifying is over, the driver with the most points is TQ. The running order of each round of qualifying is also shuffled for parity. Only the A-mains use the triple-main format.

IFMAR ELECTRIC OFF-ROAD WORLDS

**J-CONCEPTS AND
TEAM ASSOCIATED TAKE
HOME THE HARDWARE**

BY MATT HIGGINS AND PETER VIEIRA
PHOTOGRAPHY BY MATT HIGGINS

This is the one. Winning any world championship is an incredible feat, but one particular International Federation of Model Auto Racing (IFMAR) event stands out as the premier race. If you're going to win one, the Electric Off-Road World Championship is the one. If you're new to RC racing or just out of the loop, every other year, a different country hosts this race. It's the same for all of the other off-road, on-road, nitro and electric classes. With a class for just about every type of RC rig, world championships are being decided every year; however, none—not even the very fast and very F1-like 1/8-scale on-rollers—compare with the Electric Off-Road Worlds in terms of overall significance. The manufacturers and the drivers all know what's on the line, and as expected, the usual dirt stars and standouts from around the world converged on the track in Collegrò, Italy. This year's race proved to be a who's who of RC racing with on-road champs such as Atsushi Hara, Craig Drescher and Marc Rheinard making an appearance and nitro phenoms such as Jared Tebo and Jeremy Kortz also in attendance—all ready to do battle. If you haven't already skipped ahead, read on and see who captured the glory.



4WD MOD

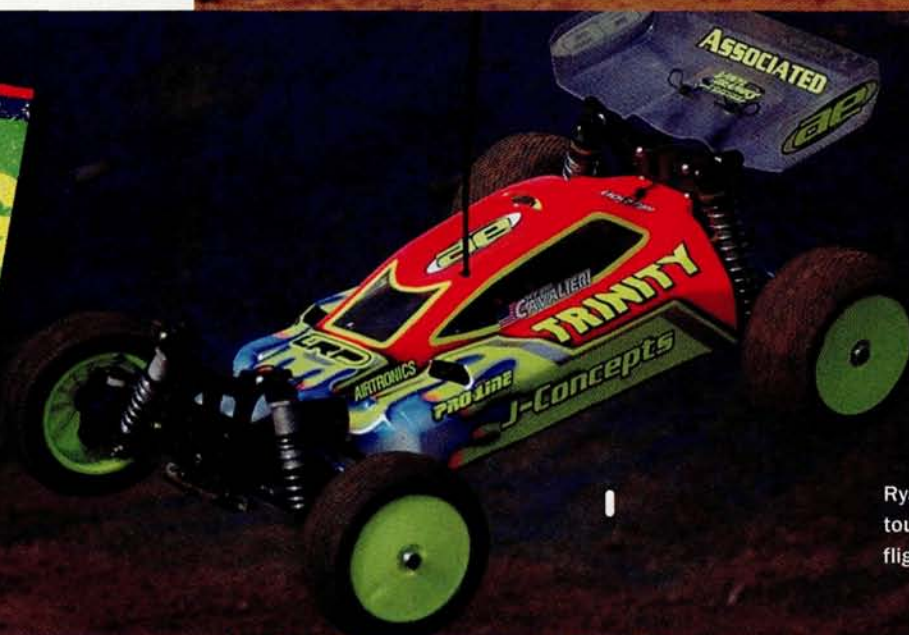
Top Qualifier: Ryan Maifield >> J-Concepts BJ4

>> Reedy power

Winner: Ryan Cavalieri >> J-Concepts BJ4

>> Trinity power

As top qualifier, 4WD was Ryan Maifield's class to win, and if the Worlds had been held on a typical blue-groove track, he might have gotten it done. But the AF Models track was no ordinary track, and its lunar-like craters could toss even the most surefooted 4-wheelers off line and out of contention. And it doesn't exactly help your nerves when you're racing heads-up with Hirosaka, Cavalieri and Neil Cragg right on your tail. A few mistakes and bad luck cost Maifield his early lead in the A1 and A2 Mains, allowing his J-Concepts teammate, Ryan Cavalieri, to take his place at the front. Maifield chased hard to get around Masami and catch Cav, but it wasn't enough. With a win in the A1, the A2 began (as A2s always do) with a chance that the Worlds could wrap with another win for A1 winner Ryan Cavalieri. And it did. Ryan bided his time early in the race and waited for the track or a mistake to give him an opportunity to take the lead. Once in front, despite the best efforts of (and lead changes with) Neil Cragg, Masami and Ryan Maifield, Cav stayed ahead of the field to wrap a second consecutive IFMAR 4WD World Championship title.



Ryan's winning BJ4 touches down after a flight over the tabletop.





Ryan Cavalieri's winning J-Concepts BJ4 shows off the new saddle-pack battery layout. Note the full-height rear wing; all the racers ran as much downforce as they could get.

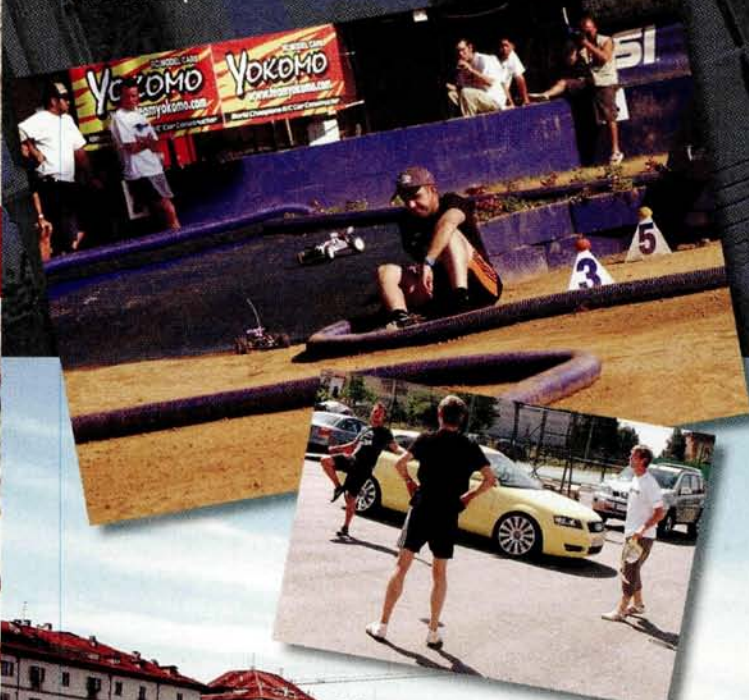
THE MAN BEHIND THE MACHINE

If you think Ryan Cavalieri won the Worlds all by himself, think again. Louis Cavalieri, Ryan's dad, is an integral part of "Team Cavalieri." He makes sure Ryan has the setups needed to win. Ryan's buddy and new roommate, Ryan Mailfield, also says he tosses the Cavs a setup bone or two.



Eat your heart out!

With two very world-class tracks sharing the same drivers' stand, you should be envious—no, strike that—completely jealous of anyone living within driving distance of the AF Models Rings facility. If Mr. Roarke (from "Fantasy Island," not Mickey Rourke) built RC tracks, this is what he'd be sculpting. Covered pits, well-stocked hobby store, good-size but not gigantic on-road and off-road layouts, covered drivers' stand, ample parking and other amenities make it any racer's dream come true. Deserving so, the AF Model Rings will also host the 2006 IFMAR Electric On-Road Worlds. For the first time, the touring cars will run outside and the 1/12-scale cars will run indoors on carpet.



Not only was the facility awesome, but the riverside city of Torino is absolutely breathtaking—well worth the trip.

2WD MOD

Top Qualifier: Ryan Cavalieri » Team Associated B4

Winner: Neil Cragg » Team Associated B4

With a win already under his belt in 4WD and the TQ spot in 2WD, it looked like Ryan Cavalieri had a legit chance to match Masami Hirosaka's feat of winning two world championships at the same event. A1 was all Cavalieri; he led the entire race. Neil Cragg (fresh off a 2WD European Off-Road Championship win) put a lot of pressure on Ryan and was only inches off his bumper a few times, but Cavalieri kept his ride on all fours and proved impossible to pass. The two frontrunners ended up crossing the line side by side with Cav taking the win by a wheel. Luck wasn't on Cav's side in A2, as he surrendered the lead when his buggy rolled. Any chance of reclaiming the top spot disappeared when he flipped over a pipe into another lane. With occasional pressure from Ryan Maifield, Cragg went on to win A2. Cavalieri led the first two minutes of the third main, and it was another two-car break out as Cragg followed in close pursuit. It looked like Ryan was on his way to the win and was even enjoying a small lead when two small bobbles allowed Cragg to close the gap. Under intense pressure, Cav flipped his buggy right before the carpeted riser and fell back to third. The always hard-charging Maifield took over second but couldn't take the lead, as Cragg didn't falter and went on to win his first World Championship.



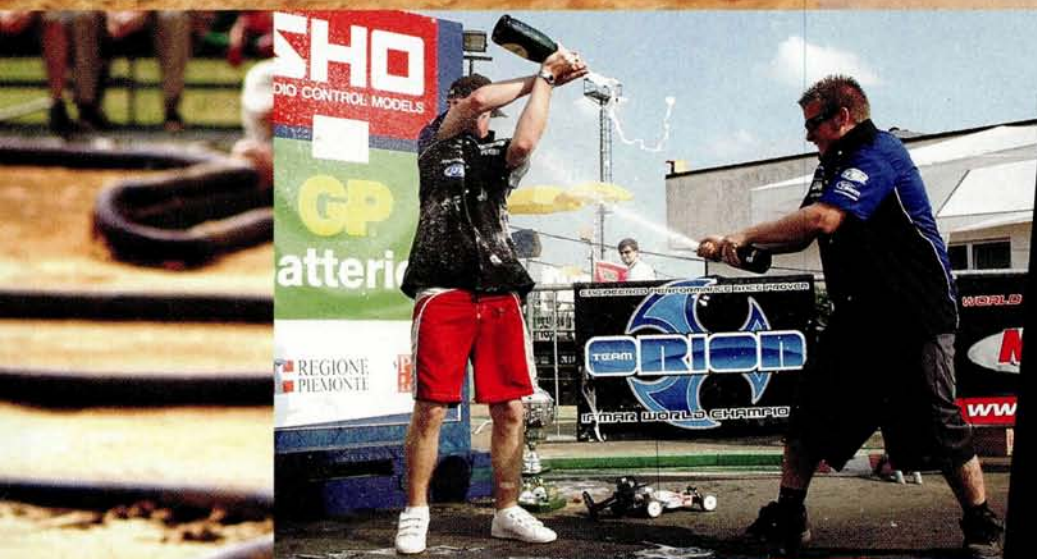
Magic Carpet Ride
The upholstered tabletop looked as smooth as a billiard table but hid uncertain terrain underneath ... It was an X-factor on every lap.



"Doo naabt go da wrong way on da trak. I wunt tell you ah-gain." We heard that 10,000 times. Against all expectations, the race director's head never actually exploded.



"Shhh! Don't tell anyone." That is what Team Associated's Jared Tebo had to say after he told us that he was experimenting with running 5 cells instead of 6. It turns out that Jared wasn't alone. Traction was so poor that



OK; so technically, Neil Cragg ran 6 cells in his B4, but he only wired up 5 of them.



teams were going to somewhat desperate measures to make their cars drivable. Most of the fast guys, including 2WD champion Neil Cragg, opted to use 5-cell packs. The Reedy camp first tried running relatively tame 15-turn motors. Reedy's Ti World Edition motor is only available in up to 13 turns, so new comms had to be wound back home in California and shipped to Italy. Eventually, most of the drivers elected to use lower-turn motors with one less cell. As cell counts go down, run time doesn't decrease (the car's overall run time actually marginally increases), but the reduced voltage (6 volts instead of 7.2) takes away some of the car's punch. It proved to be the hot setup—just ask Neil Cragg. "The only thing I changed was to go back to a 12-turn and down to 5 cells."

the 5-cell advantage

Track Talk

Ryan Cavalieri/Associated

"Aw, the track's definitely ... hard. One of the hardest tracks I've raced on. All the tracks I've raced on, there's punch everywhere. Here, you have to feather it. The smoother you drive, the faster you go."

Matt Francis/Team Losi

"It's pretty awesome. I mean it's brutal, very hard packed underneath, but it's breaking up. It's dusty; it's a handful, but man, it's fun—a lot of fun—driving. It's so different from what we're used to driving on. Like in Connecticut [editor's note: location of 2005 ROAR Mod Nats], no blue groove; it's fun. The carpeted jumps—I dunno, it's hard to tell what's underneath that carpet. You're out there running, and your car does something weird off the jump; you hit the exact same spot. If the jump was perfectly smoothed out, that'd be one thing, but with the carpet on it, it's hard to tell."

Adam Drake/Team Losi

"I think the track is fun; I like the multi-surface. As far as the carpet goes, it's a lot different; it's more like a gas track as far as the dusty blue groove and extreme dust outside the groove. But the jumps are tricky because they have carpet on them, so they have grip; they don't change that much, but you don't know what lies underneath. There's rocks and holes underneath, but the carpet covers that up. It makes it a lot more challenging."

Mark Pavidis/Team Kyosho

"It's fair for everybody, but most of the time, that's how it is over here—the conditions are totally out of control compared to what we're used to at home."

Atsushi Hara/Durango

"Difficult. Very difficult to drive: bumpy, slippery, but fun to drive."

ON TRACK with Team Losi's Mike Truhe



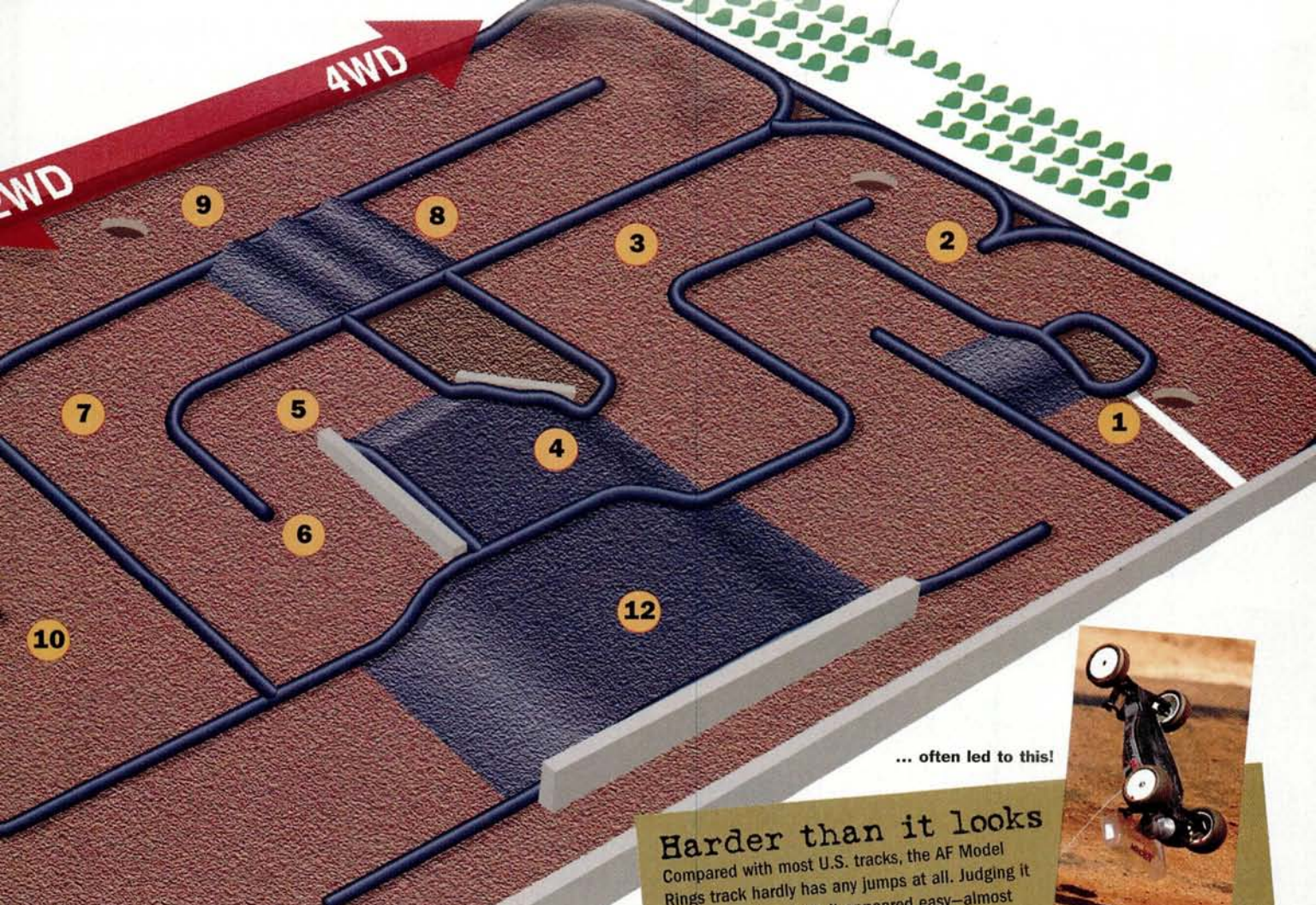
We caught up with Mike Truhe as he walked the track on the morning of the 2WD Mains. Like other racers, he was studying the torn-up surface and trying to determine the fastest and, more important, the safest line around the well-worn clay track. Mike let us in on what he thought was key to going fast: "Rhythm is huge. It's a hard track to get into a flow, but it's very important. It's also easy to get out of your rhythm. When you come up on a slower car—even if they get out of your way—you have to start all over." As

one of the top 10 fastest 2WD pilots, Mike had to put the moves on a fair share of cars. We asked him how he gets it done.

"Passing is hard to plan; you have to improvise a lot. I'm fast through the triples, so I think I'll pass a lot of cars turning onto the straight, but basically, you have to take opportunities as they come."

1» "You have let the car settle coming off the jump. You don't really jump it; you just pop over it, and this corner is kind of slick; it doesn't really groove—it polishes." **2»** Like many other sections, Mike goes through this area at about $\frac{1}{4}$ throttle. "You have to be smooth; you have to run tight, so you're not really blown out as you go through here." A ditch on the final apex makes these corners that much more challenging. "I pretend the hole is the corner. You're doing it right when you have just one front tire in the hole." Many cars would go through it square with all four wheels and lose valuable time as their rear tires spun trying to find traction. **3»** "Here, you can make up time; it's one of the few places that you can kind of get on it." **4»** "This section is really tricky because you're trying to change direction on different surfaces. The carpet is twitchy; you touch the wheel, and the car turns." The drivers come off the large carpeted riser in a variety of ways: some do a small jump, some launch far off it and others roll off. "I just squirt down and try not to really jump off." **5»** At two cinder blocks high, the apex of this corner is built up to the same height as the carpeted riser. "This corner is very tricky. Visibility is bad. A lot of people get stuck here." **6»** "This is just your basic right-hander. You just try to carry speed." **7»** "This is another basic right-hander. I drift out to set up for my line through the triples." **8»** "I think I run a different line through here than most people. I double single, and most people single double. I like to double single so I can land on carpet. Other guys land on the dirt and flip a lot." **9»** "You can get on it in about 10 to 15 feet at the most. About halfway down, there's a wicked bump, so I go towards the inside to avoid the bump. I start slowing down a little past halfway. I coast to the corner." **10»** "I'm full throttle; there's a lot of bite through here. This is my fastest section. These are just your basic corners." **11»** One of the few actual jumps on the track shortened the already brief straight heading back in front of the drivers' stand. "Basically, I just roll over it." **12»** For 4WD, the tabletop proved to be the most challenging part of the track. Two-wheel-drive ran in the reverse direction, and the jump appeared much easier to launch off. "I try to downside it the best I can and let it settle before hitting the bump after the carpet."





... often led to this!



Harder than it looks

Compared with most U.S. tracks, the AF Model Rings track hardly has any jumps at all. Judging it on looks alone, it appeared easy—almost

Craters like this ...



too easy. These guys are supposed to be the best of the best, right? Well, up-close and personal—and after a day's worth of practice—this once tame-looking track turned into a monster. The track pulled up in almost every corner, and the straight was more like a rhythm section. After the first day, the surface looked like an 1/8-scale buggy track at the end of the season. By this point, nobody thought this track was easy. On top of having an extremely rough, pothole-laden surface, there was almost no traction. To compensate, Neil Cragg won 2WD using only 5 cells! (see "Less is More" sidebar). In 4WD, the landing after the tabletop was so nasty and the launching surface was so uneven that most buggies went flipping out of control on landing. Landing on top was clearly the safest and overall fastest method, but off-road racers are apparently a stubborn lot, and many tried clearing the big jump each time. No one—and we mean no one—could clear it every time throughout an entire five-minute race. What looked to be too easy proved to be one of the hardest tracks many of these drivers have ever seen.

It rained lightly a few times during the week, and there was a major midweek downpour. The crew quickly covered the track and prevented the need for any lengthy delays.



IFMAR ELECTRIC OFF-ROAD WORLDS

Speak

"I just thought I was going faster than I was."

—Matt Francis on qualifying out of the A-Final



"I'm retiring from off-road racing. It's time for me to move on."

After 19 years of RC racing, Matt Francis plans to hang up his transmitter bag in 2006, and will likely make the On-Road Worlds his farewell race. He'll be missed; Matt set a new standard for driver professionalism on and off the track. In addition to two IFMAR Off-road Worlds victories (2WD in 1995 with Team Associated, and 4WD in 2001 with Team Losi), Matt is a two-time "Readers' Choice" award winner for "Favorite Driver."



"It's a dustbowl. You just hold on for dear life. As soon as you've got someone behind you, you try to squeeze the trigger a little harder—well, I push the stick a little farther—and, that's when the mistakes creep in."

—Craig Drescher on the difficult track conditions



"I think I have a shot."

—Ryan Cavalieri



"I tell you ... it feels pretty good!"

—Neil Cragg after winning the 2WD Worlds



"The A-main is tough. One crash, and you're finished."

—Atsushi Hara on the level of the competition

"It's hurt-Ting!"

—Ryan Maifield commenting on a fellow driver's fashion sense



"With the track being blown up, our 9- and 10-turns were too fast, so we ran 12 and 13s. To cut down the wheelspin, we ran low timing and a light spring."

—Chad Phillips, Team Trinity's motor guru, on how he prepped Ryan Cavalieri's winning motor



"It's RC. You just punch it!"

—Ryan Maifield



"We TQ'd and lost the Hot Rod Shootout; we TQ'd and lost the ROAR Nats. I thought, 'That's OK, we're gonna win the Worlds.'"

—J-Concepts' prez Jason Ruona

"I get to watch now."

—4WD champ Ryan Cavalieri, looking forward to sitting out the final A-main.

"You can't crash. If you crash once, you might as well just pull it off the track."

—Ryan Cavalieri

"The ruts are back—no surprise."

—Billy Easton



"It's kind of different every time. You can single-double, double-single, double flip, double backflip, triple Lindy ..."

—Matt Francis describing going through the triples in 2WD

"I was like 'Crash, man! Crash!'"

—Neil Cragg on what was going through his mind as he followed Ryan Cavalieri in 2WD

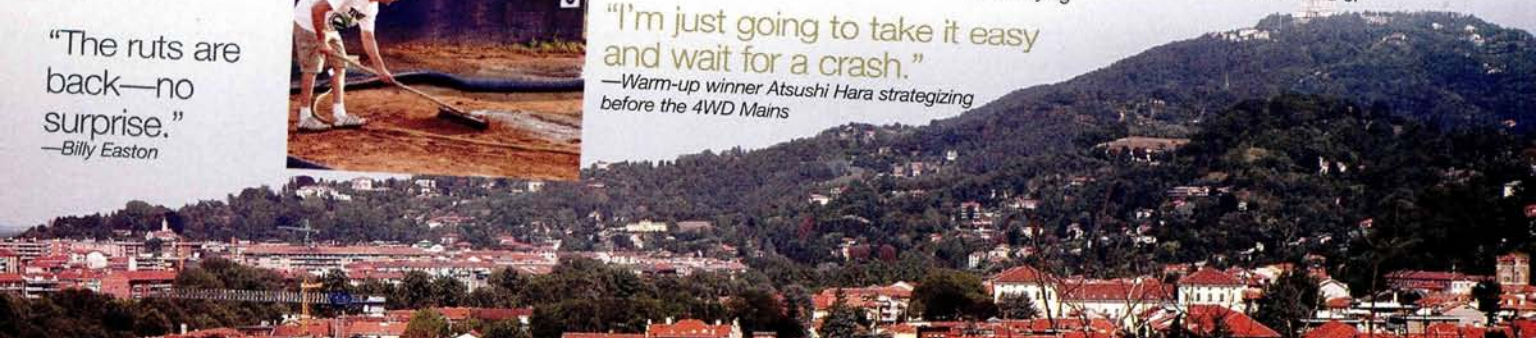
"It was a good learning experience for [Team Kyosho] because this is the first time we tested what will be the production parts. Unfortunately, we found the weak parts."

—Mark Pavidis after breaking in the final round of 4WD qualifying



"I'm just going to take it easy and wait for a crash."

—Warm-up winner Atsushi Hara strategizing before the 4WD Mains



New in the Pits

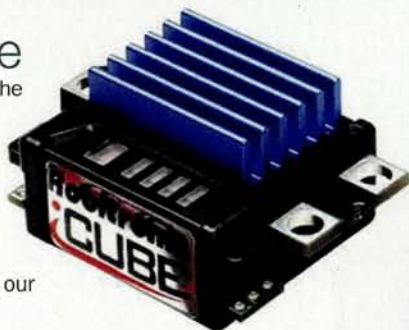


LRP 14A Power Supply

No points for clever marketing (c'mon guys—you named your new power supply "Power Supply"?), but with its compact design and universal plug/power system, LRP's 14A box looks like a winner; jack into a 220V outlet in Turin or a 110V outlet in Toledo, and the Power Supply does its thing without any special setup. It's also fully FCC- and UL-approved (which you probably weren't worried about but shows that LRP cares about getting the specs right).

Robotronics iCube

This new speedo isn't yet imported to the U.S., but it was so cool we had to tell you about it. Using a computer, the speed control can download a bunch of post-run data such as a discharge curve and amp draw. It's amazing the kind of tech that is finding its way into RC. With any luck it will soon be hitting our shores.



J-Concepts Tire Bands

How are these better than ordinary rubber bands? Well, these are blue. And they say "J-Concepts" on them. See? Way better.



Peak signature motors

Keeping with the factory team theme, new member Mark Pavidis now has his own namesake Vantage motor. The Surikarn edition is sporting new colors, as well as the Team Orion Hara edition.

LRP Quantum Competition 3

... or QC3 as the new speed control will be known. According to LRP's Juergen Lautenbach, the latest Quantum-series speedo is built for ultimate smoothness and linear feel. "We learned a lot here at the warm-up; we understood that linearity

and 'feel' are the major issues for a speed control on this track. We looked into this and spent a lot of time and effort to improve the QC2, which we already feel is a very good speed control. We managed to improve it and bring it to a new level, but more than that, we developed one complete



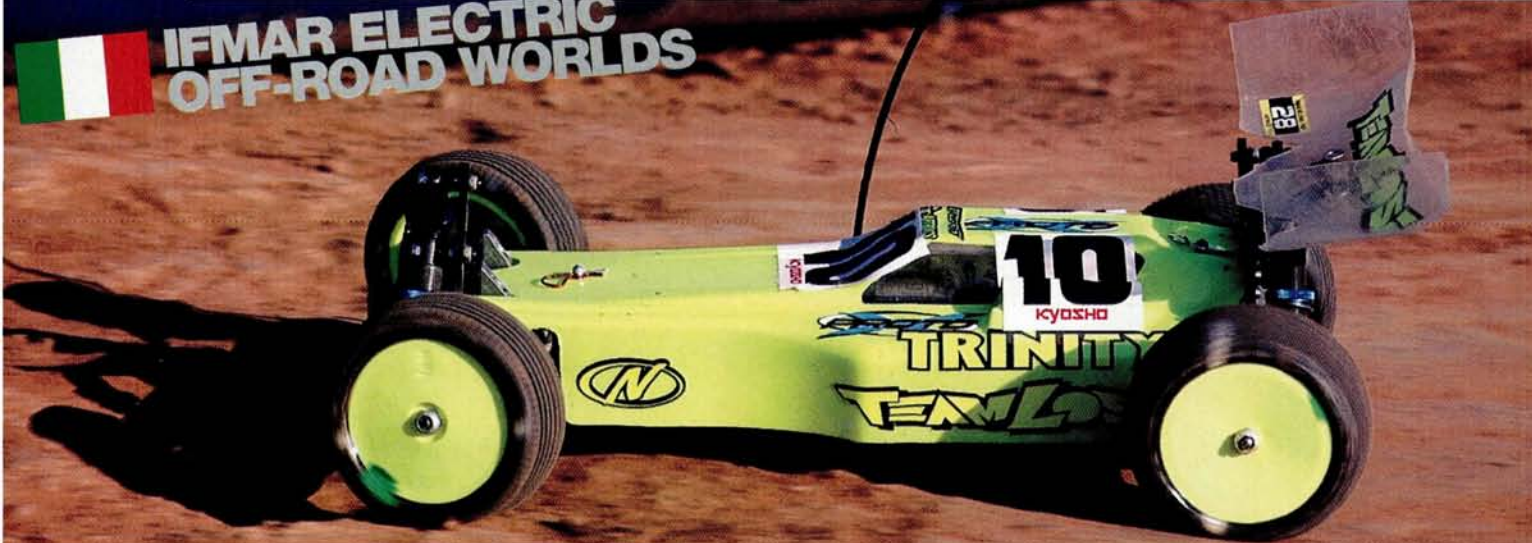
power profile to suit the slippery conditions. We will go to six power programs in the QC3: three dedicated to off-road racing and three new profiles to give more power and throttle response to touring cars as well." Sounds good Juergen. And it doesn't hurt that Ryan Cavalieri used a QC3 to win the Worlds! You can't top that kind of cred.

J-Concepts setting board

It's solid aluminum, but thanks to aggressive hogging out on its flip side, the board is still very lightweight. Jason Ruona says the J-Concepts team guys were lusting after this prototype, but with only one to go around, he decided the only fair thing to do was give it to

whoever won the Worlds.
It's Ryan Cavalieri's now.





Team Losi Proto-X

Team Losi ran both Double-X4 and Triple-X4s at the Worlds, and the drivers were free to choose the buggy they felt handled best on the tricky track. But there was also a third car in the mix: the Proto-X, an experimental X-car that uses a JRX-S drivetrain and chassis layout in 4WD buggy mode. We spoke to Adam Drake for his insights on the new car:

The Proto-X is only about a week old; is that right?

Yes, the first day, Travis [Amezcu] had it at the track was two days before we left for the Worlds. He ran three packs through the car and then another three the day before we left.

Since the car is so new and there are only two here, is it safe to say this isn't the car Team Losi is trying to win the Worlds with?

Well, Travis ran the car at SoCal and was really happy with it so that's what he started to practice with. He ran his Double-X4 for two runs and decided to stick with the Proto-X. I didn't plan to run the Proto-X; Jukka [Steenari] was going to run it, but his Double-X4 was very good, so he decided to stick with it. With two practice runs to go, I got the car from Jukka and decided to run so I could help Travis. The two of us worked together to find the setup, so as the track changed, we kind of knew where to go. It isn't just one man on his own.

I imagine it's very hard to find a setup with a car this new on such an unpredictable track.

Yeah, especially with the track changes and it being an unusual electric track. I think when we came for the warm-up, we had a really good handle on setups for the Double-X4 and Triple-X4, but the track's very different. And with me just running the car for the two practice runs, trying to get used to it and make changes to help Travis and myself, it has been difficult. But I think the car shows a lot of promise.

What's the primary advantage of the JRX-S platform for a buggy? Drivetrain, centered battery ...

It's the battery in the center—everything in the center: servo, motor, battery. All of the weight's in line in the center. It just makes everything a lot more balanced in setup and driving, and that makes it easier to dial in setups.

Tires of choice

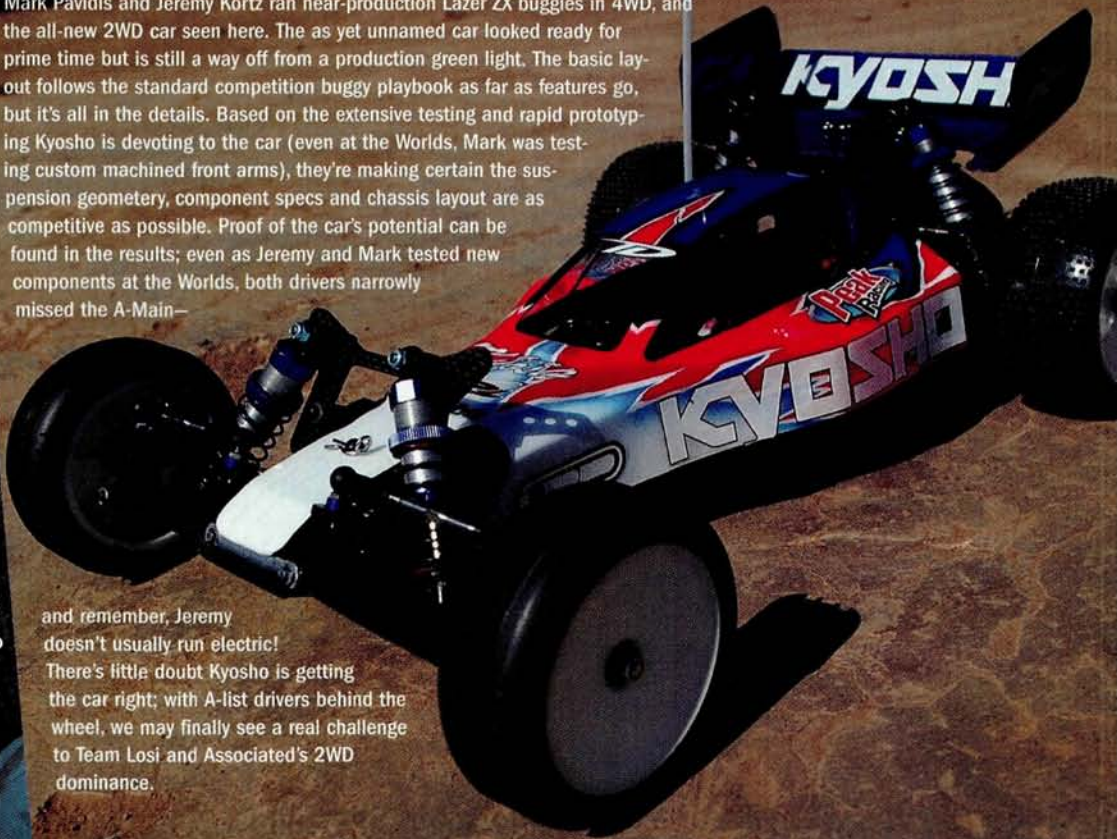
4WD: Losi Blockhead red (front), Losi X2000 red (rear)
2WD: open front tire, Pro-Line Hole Shot LP M3 (rear)

The use of control tires eliminates tread selection as a tuning aid but not rim and foam insert mods. To equalize these variables, IFMAR required the racers to assemble their tires in a designated tire-gluing area. After assembly, the tires were inspected by IFMAR and marked with paint across the tire and rim, so any cheating by removing the tire can be easily spotted in tech. Legal mods included trimming the foam inserts, nipping knobs, trimming the tire beads to fit the wheels properly and drilling vent holes in the wheels (maximum diameter 6mm, two allowed). A significant mod ruled "not legal" was trimming or removing the wheels' ribs to increase flex.

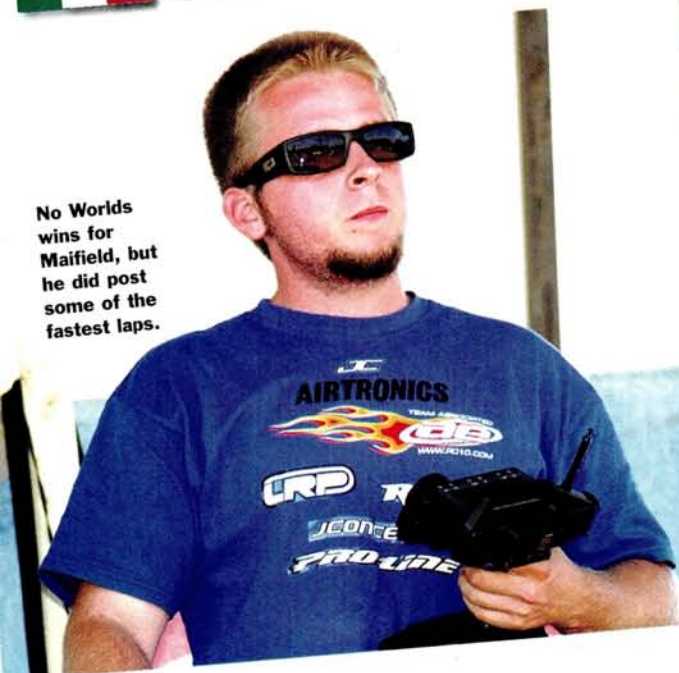
Kyosho 2WD Prototype

The Team Losi guys weren't the only ones wheeling prototype machines. Kyosho's Mark Pavidis and Jeremy Kortz ran near-production Lazer ZX buggies in 4WD, and the all-new 2WD car seen here. The as yet unnamed car looked ready for prime time but is still a way off from a production green light. The basic layout follows the standard competition buggy playbook as far as features go, but it's all in the details. Based on the extensive testing and rapid prototyping Kyosho is devoting to the car (even at the Worlds, Mark was testing custom machined front arms), they're making certain the suspension geometry, component specs and chassis layout are as competitive as possible. Proof of the car's potential can be found in the results; even as Jeremy and Mark tested new components at the Worlds, both drivers narrowly missed the A-Main—

and remember, Jeremy doesn't usually run electric! There's little doubt Kyosho is getting the car right; with A-list drivers behind the wheel, we may finally see a real challenge to Team Losi and Associated's 2WD dominance.



No Worlds
wins for
Maifield, but
he did post
some of the
fastest laps.



Who was really the Worlds' fastest driver?

Winning the Worlds requires consistency; it isn't the guy who has the fastest lap times, it's the guy who has the most fast lap times. But it's still fun to see who posted the fastest single run around the pipes! In the first two 4WD A-mains, former world champion Billy Easton had the fastest lap times with 27.452 and 27.580. Ultimately, it was TQ and third-place finisher Ryan Maifield who threw down the low time of 27.093 in A3. Winner Ryan Cavalieri's best time was 27.772 in A2. In the 2WD A-mains, the winner again didn't have the fastest single lap. Instead, Ryan Maifield not too surprisingly pushed it the hardest with a ballistic 28.821 run in A2. Interestingly, Peter Pinisch who finished third in the B-main can claim a faster single lap record than any of the 2WD A-main drivers with his 28.804 time around the challenging circuit. B-main winner Paul Bradby's best time was almost a full second slower, proving that consistency is key.

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FOR MORE WORLDS PICS

WORLD- WINNING GEAR

As we all know, the driver has nothing to do with winning. Cavalieri? Cragg? They're hacks; they just have the best equipment. We take a look at the most popular race gear in the top 10 for 2WD and 4WD. Here's who occupied the two A-mains by percentage. For example, when combining both the 4WD and 2WD classes, 30 percent ran Novak speed controls. ■

CHASSIS	RADIO	SPEED CONTROL	BATTERY	MOTOR	SERVO
Associated 35%	Airtronics 40%	LRP 35%	Reedy 40%	Reedy 50%	KO Propo 40%
Losi 25%	KO Propo 40%	Novak 30%	Trinity 30%	Trinity 30%	Airtronics 35%
J-Concepts 15%	Futaba 15%	NOSRAM 15%	Team Orion 10%	Team Orion 10%	Futaba 20%
Yokomo 15%		Hara 10%	Yokomo 10%	Check Point 5%	
Durango 10%		KO Propo 5%	Checkpoint 5%	Fantom 5%	
			SMC 5%		

WORLD-WINNERS

4WD

FIN.	QUAL.	DRIVER	COUNTRY	CHASSIS	BATTERY	MOTOR	SPEED CONTROL	RADIO	SERVO
1	4	Ryan Cavalieri	USA	J-Concepts BJ4	Trinity GP3700	Epic Shock 13x2	LRP QC3	Airtronics M11	Airtronics 94360
2	3	Neil Cragg	UK	Yokomo proto	Reedy GP3300	Reedy Ti 11x2	Nosram Razor	KO Propo EX-10	KO Propo
3	1	Ryan Maifield	USA	J-Concepts BJ4	Reedy GP3300	Reedy Ti 12x2	LRP QC3	Airtronics M11	Airtronics 94360
4	5	Billy Easton	USA	Losi Triple-X4	Trinity GP3700	Epic 13x2	Novak GTX	Futaba 3PK	Futaba 9350
5	2	Masami Hirosaka	Japan	Yokomo proto	Yokomo GP3700	Reedy 10x2	KO Propo VFS	KO Propo EX-10	KO Propo
6	8	Peter Pinisch	Austria	Durango	Reedy GP3300	Reedy 11x2	Nosram Razor	Airtronics M11	Futaba S9550
7	10	Craig Drescher	UK	J-Concepts BJ4	Reedy GP3300	Reedy Ti 11x2	Novak GTX	KO Propo EX-10	KO Propo
8	9	Paul Bradby	UK	Yokomo proto	Reedy GP3300	Reedy Ti 10x2	Novak GTX	KO Propo EX-10	KO Propo
9	7	Jesse Robbers	USA	Losi Triple-X4	SMC 3600	Fantom 13x2	Novak GTX	INS	INS
10	6	Atsushi Hara	Japan	Durango	Orion V-Maxx 3700	Orion 10x2	Hara Twister 2.0	KO Propo EX-10	KO Propo

INS—information not supplied by driver

2WD

FIN	QUAL	DRIVER	COUNTRY	CHASSIS	BATTERY	MOTOR	SPEED CONTROL	RADIO	SERVO
1	2	Neil Cragg	UK	Associated B4	Reedy GP3300	Reedy Ti 12x2	Nosram Razor	KO Propo EX-10	KO Propo
2	1	Ryan Cavalieri	USA	Associated B4	Trinity GP3700	Epic Shock 14x2	LRP QC3	Airtronics M11	Airtronics 94360
3	3	Ryan Maifield	USA	Associated B4	Reedy GP3300	Reedy Ti 12x2	LRP QC3	Airtronics M11	Airtronics 94360
4	10	Atsushi Hara	Japan	Associated B4	Orion V-Maxx 3700	Orion 13x2	Hara Twister 2.0	KO Propo EX-10	KO Propo 2343
5	4	Jared Tebo	USA	Associated B4	Check Point	Check Point 14x2	LRP	Futaba 3PK	Futaba
6	8	Masami Hirosaka	Japan	Associated B4	Yokomo GP3700	Reedy 11x2	KO Masami Spec	KO Propo EX-10	KO Propo
7	6	Billy Easton	USA	Losi Triple-X	Trinity GP3700	Epic 14x2	Novak GTX	Futaba 3PK	Futaba
8	7	Dave Montgomery	USA	Associated B4	Reedy GP3300	Reedy Ti 12x2	LRP QC3	Airtronics M8	Airtronics
9	9	Mike Truhe	USA	Losi Triple-X BK2	Trinity GP3300	Epic Shock 14x2	Novak GTX	Airtronics M11	Airtronics 943602
10	5	Travis Amezcua	USA	Losi Triple-X CR	Trinity GP3300	Epic Shock 14x2	LRP QC3	Airtronics M11	Airtronics

PRO ANNOUNCEMENTS

GS PICKS UP JEFF GUEST

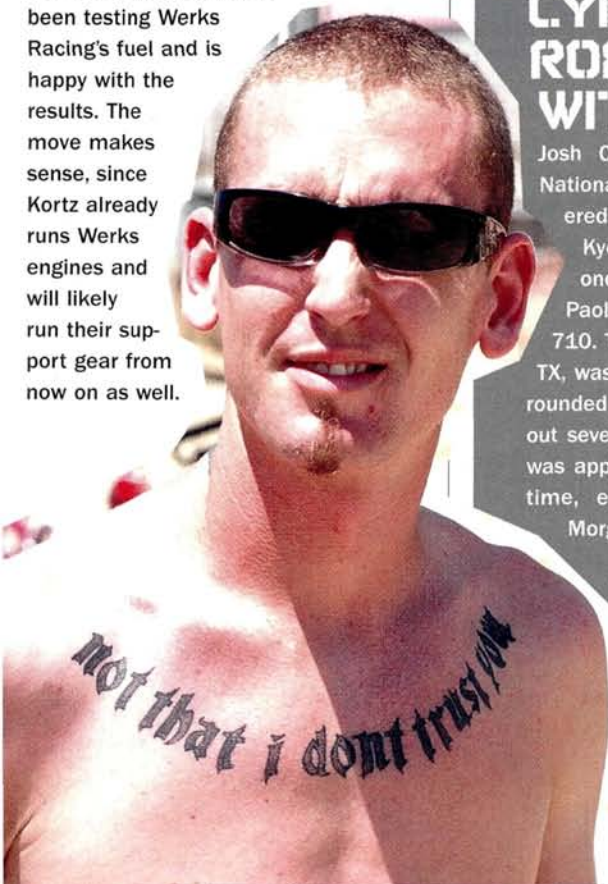
Marty Korn will no longer be the only factory GS Racing racer. Korn helped secure GS Racing's new factory pilot, Jeff "Pork Chop" Guest. Guest, a former electric racer now turned nitro racer, made a name for himself in the Outlaw

Monster Truck class and will now also run GS Racing's CL-1 in the 1/8-scale Pro Buggy classes.



KORTZ TO RUN WERKS FUEL.

Kyosho 1/8-scale ace Jeremy Kortz is off O'Donnell and has signed up with Werks Racing. Kortz has been testing Werks Racing's fuel and is happy with the results. The move makes sense, since Kortz already runs Werks engines and will likely run their support gear from now on as well.



\$5,000 PAYOUT AT BYRON CHALLENGE

The first annual Byron West Meets East On-Road Challenge saw 1/8-scale, 200mm Sedan and 1/10-scale Outlaw racers receive more than \$5,000 dollars in contingency checks. Primary sponsor Byron Race Fuel gave \$150 to anyone who made it into the A-main running Byron Fuel and also gave additional payouts to the top three in each class, for a total payout of \$5,325. The Racine Radio Control Club co-sponsored the event held in Kenosha, WI. We'll definitely see you at the second Byron Challenge; with that kind of cash on the line, the race is sure to have a successful future.

CYRUL WINS ON-ROAD FUEL NATS WITH KYOSHO RRR

Josh Cyrul took home the ROAR Fuel Sedan National victory with his Kyosho V-One RRR powered with a Sirio engine and tuned pipe. Cyrul's Kyosho teammate Chris Tosolini finished second, and third went to Serpent's new owner Paolo Morganti, obviously piloting a Serpent 710. The race, held at RCRCNT outside of Dallas, TX, was stopped because of rain. Controversy surrounded the finishing order since Morganti flamed out several times, which forced him to pit, and he was apparently counted for additional laps. At this time, even race-goers are uncertain whether Morganti actually earned third place.

Other race notes include a new two-layer foam tire from Jaco, dubbed "Wrap," that has a firmer foam near the rim and a softer compound as the outer ring. It is reported that only a few select drivers had these new shoes, and they were at a distinct advantage.



TEEMU WINS TC EUROS

Looks like Teemu Leino's comeback is complete! When you win any kind of European championship in on-road racing, you're one hell of a driver, but beating guys such as world champ Marc Rheinard, Andy Moore and David Spashett in the TC Euros ranks right up there with winning the Worlds. Schumacher was the big winner, and four of the top five drivers at the Euros ran Orion/Peak-powered cars. Fourth-place driver Chris Grainger ran Checkpoint's new motor. Here are the top five from the race.

1. Teemu Leino/Finland—Schumacher/Orion
2. Marc Rheinard/Germany—Tamiya/Orion
3. Andy Moore/Great Britain—Hot Bodies/Orion
4. Chris Grainger/Great Britain—Yokomo/Checkpoint
5. David Spashett/Great Britain—Tamiya/Peak



Picco

MUGEN SEIKI

PICCO AND MUGEN TAKE EUROPEAN ON-ROAD CHAMPS

Ielasi Daniele, driving a Picco-powered (P7-R Evo) Mugen MRX-4, battled with Michael Salven, who ran a Serpent Vector for most of the Main event, to win the coveted 1/8-scale Euro On-Road Championships. Salven unfortunately suffered radio problems, which caused a bad wreck that damaged his car. He finished the race but outside the top three. Alberto Picco finished second—obviously with a Picco-powered Serpent Vector, and third went to Massimo Fantini, who also piloted a Vector.

MONSTER MADNESS: TAMIYA TNX DOMINATES SMALL-BLOCK AND BIG-BLOCK CEN TAKES TRUGGY TITLE

Block and Big-Block Monster Truck with their new pivot-ball TNXs. Jimmy took first and David took second—in both classes! The Truggy class was also full of fast guys. CEN's Andrew Smolnik took the Truggy win with his Genesis, and also earned a TQ trophy in buggy class running the CEN Matrix, but problems in that Main cost him the victory (Chris Sytsma went on to win). The E-Maxx class also saw some close racing with the top three guys finishing on the same lap, but Dave Maffucci took the first-place trophy. Expect Monster Madness to be even bigger and better next year!

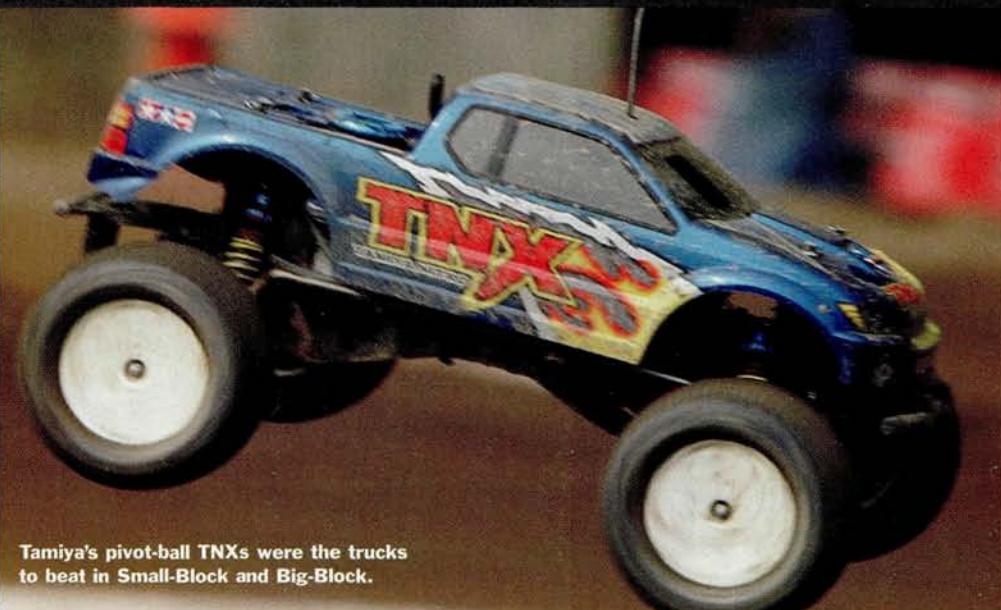
Enfield, CT—the third annual *Radio Control Car Action* Monster Madness race was once again held at RC Madness, and again, it was a great success with more than 170 drivers registered. On a muggy day during which the temperature hovered in the high 90s, it was a struggle to stay cool, but that didn't slow down the Tamiya squad. Jimmy Jacobson and David Jun dominated in Small-



Truggy winner Andy Smolnik and his CEN Genesis.



Jimmy Jacobson and David Jun scored with their TNXs.



Tamiya's pivot-ball TNXs were the trucks to beat in Small-Block and Big-Block.

GOT A STORY FOR RACER NEWS? Contact Jason Sams at jasons@airage.com.

UNDER THE HOOD

Josh Cyrul's

Kyosho V-One RRR

RACE GEAR

Radio KO Propo Helios

Servos (throttle/steering)

Ko Propo 2364

Engine Sirio Evo2 World Edition

Plug Sirio 7

Pipe Sirio

Fuel Sirio

Tires Jaco

Gearing 1st, 17/60; 2nd, 22/55

Clutch type: Kyosho 3D

SETUP

SUSPENSION	Front	Rear
Shock piston	1.2x1mm	1x2mm
Oil	500WT	500WT
Spring	Kyosho black	Kyosho Silver
Upper shock mount	V	5
lower shock mount	Standard	Standard
Ride height	5mm	5.5mm
Droop	0mm	4mm
Caster	8.5 deg.	—
Camber	2 deg.	3.5 deg.
Camber-link position	Up	Inner
Toe-in/out	2 deg. out	2 deg. in
One-way	Solid axle	—
Swaybar	Standard blade	1.8mm
Rear-hub position	—	Standard
Wheelbase	—	Standard
Steering-plate link position	10mm	—
Tires	Jaco 40	Jaco 40

HOT FACTORY MODIFICATIONS

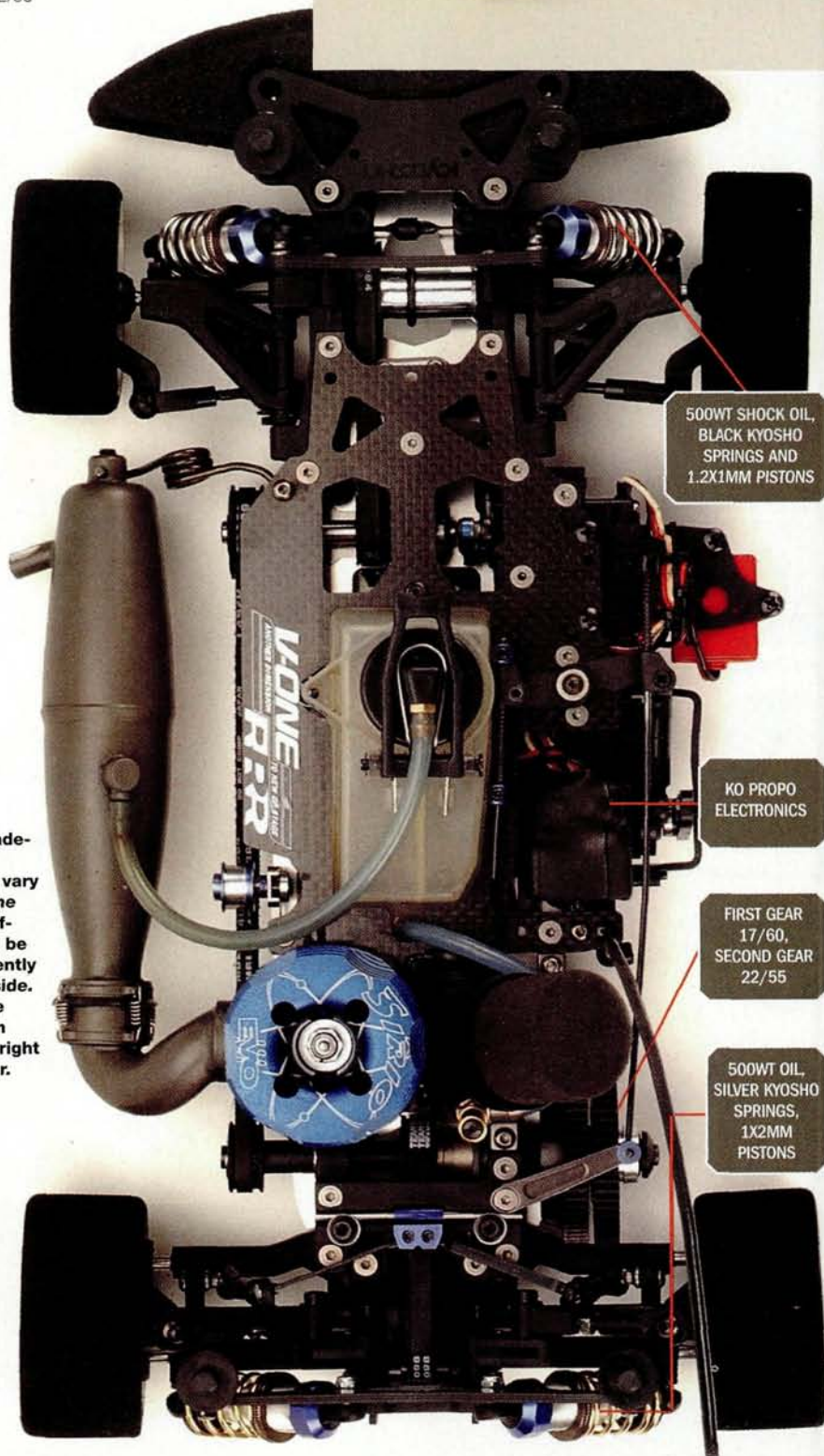
Josh drilled extra holes in the rear shock tower for more mounting positions. He also cut the tops of the rear hubs for less camber change.



Cyrul's fully adjustable blade-type swaybar allows him to vary its tension. The swaybar's stiffness can also be set independently from side to side. Cyrul runs the swaybar much softer on the right side of the car.



The bottom anchoring hole of the front suspension arms has been ground away for better clearance because Josh does not use those holes.



500WT SHOCK OIL,
BLACK KYOSHO
SPRINGS AND
1.2X1MM PISTONS

KO PROPO
ELECTRONICS

FIRST GEAR
17/60,
SECOND GEAR
22/55

500WT OIL,
SILVER KYOSHO
SPRINGS,
1X2MM
PISTONS

Interview

LAST BIG WIN: ROAR CARPET OVAL NATS

SPONSORS: KYOSHO, CEFX, JACO, SMC, KO PROPO, TRUESPEED, CUSTOM WORKS, SIRIO, KOLORS BY KROPY, HALO HOBBIES

WATCH: LAW & ORDER

LISTEN: TRANCE

WHEN I'M NOT RACING: I SPEND AS MUCH TIME AS I CAN WITH MY WIFE AND DAUGHTER



Q: You've raced just about everything on-road-related. Of all the classes you've competed in which is the toughest— $1/12$, $1/10$, or $1/8$ -scale?

A: I can't really say one is more difficult than another. Each class presents its own challenges that require a racer to adapt to be at the top level. Example: $1/12$ requires a smoothness and self control to manage battery life for 8 minutes; $1/8$ is simply hustling the car as fast as possible while being aware of your engine and tire wear. TC with rubber tires is more about focusing on your tires—pushing them to the limit without overheating them. ... All have their own particular challenges, but even from race to race, these challenges change as the equipment evolves and the level of competitiveness increases.

Q: After spending considerable time on a track, what do you work on to lower your lap times?

A: First, I look at the high-speed sections, as you can gain or lose the most time

there. These sections also tend to be the hardest on tires—and batteries, in electric—so it's important to find a balanced setup that yields max corner speeds and maintains efficiency for tires and batteries. The other thing I work on is drivability. If a car responds to the input that I give it and I can comfortably put it where I want it, I know that I can push it to the limits and will have a good weekend of qualifying and racing.

Q: What advice would you give to up-and-comers who want to reach your level of achievement?

A: Practice, watch, listen and form your own opinions using what you learn, and apply this knowledge to the best of your ability. People often fall into a habit of following someone else's setups or jumping to different people's setups. Most of the top racers have fully developed distinct styles; you can see that when you watch them drive. Average racers never develop a style and refine it because they jump from setup to setup, or car to car, thinking that a magic setup or car will take them to the top. I feel it takes at least three to six months of racing and practicing to learn how to get the most out of a car. Practicing and setting up a car with settings you feel comfortable with while pushing your driving to the limits is what will get you to the front.

Q: If you weren't racing RC cars but were racing something else, what would that be?

A: Not really sure; of course, I would love to drive full-size racecars, but I've never really had the opportunity. I could see myself speed skating or cycling, as I used to be pretty quick before I packed on the pounds!

Q: There's a certain rivalry between on-road and off-road drivers. What would you like to say to off-road guys who think on-road is easy?

A: On-road is easier to drive around; I agree with that. But the car setup and knowledge that need to get around an on-road track with the fastest in the world ... that's another story. If off-road drivers were better, we would see Kinwald, Francis, Cavallieri and the rest dominating the on-road races, but it just doesn't happen. Again, you are talking about different disciplines; you wouldn't expect to see Hara, Rheinhard and Baker show up and win an electric off-road event—even though it did just happen at the pre-Worlds! It takes loads of time, practice and the desire to do it in so many categories, and only Masami Hirotsuka has been able to do that, and he has 13 or 14 world championship titles to prove it.

Q: You own a hobby shop and CEFX, and you're also a father. How do you manage to travel and compete in big races?

A: I don't manage well! Right now, it's frustrating, as I'm not balancing everything as well as I would like to. It's pretty much wake up at 6 to 7 a.m. and go to bed around 1 or 2 a.m. to take care of as much as I can. I think I'm running on experience at racing events and the bonus of having some of the best companies in RC backing me. As the business progresses and I streamline things, I'll be able to return to the proper testing that I used to do. And I'll try to get ahead and make a solid bid for that first world championship.

Q: What's the best thing for you about RC racing?

A: Chance. There's always a chance you'll win. The more you work, practice and dedicate yourself, the more possible your chance to win becomes; but no matter what, there is always a chance. The other cool thing is the respect among most drivers. We can race one another for the titles, and everyone is so intense; but a few hours later, we're all having dinner together and laughing about the stupid stuff we all did over the weekend or just enjoying stories from the past.

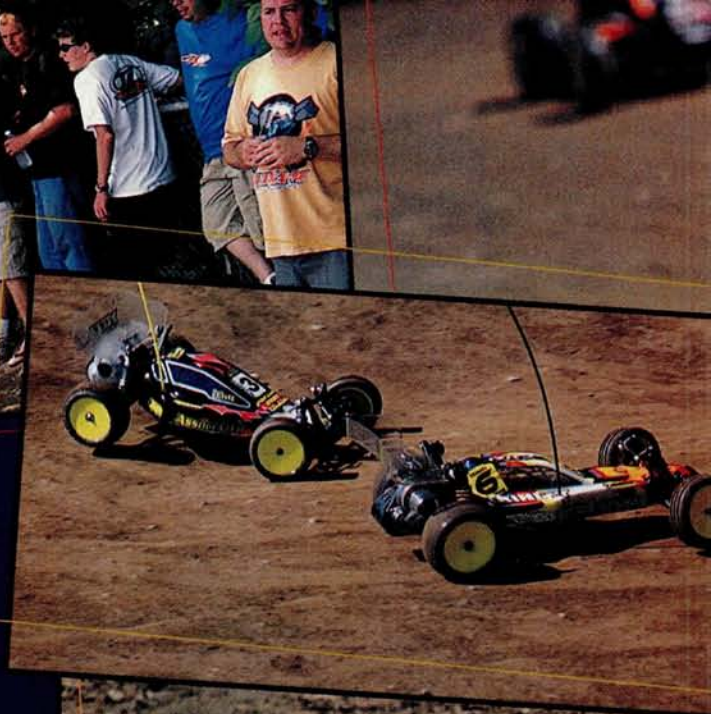
Q: Which principles does Josh Cyrul swear to live by?

A: If you want to be better than the best, you have to practice twice as hard as they do. Most important, you must have fun. ■

FIND IT

» Go to page 217 for manufacturers' contact information

A huge crowd gathered all around the track to watch the A-mains. How often do you have a chance to watch the best of the best battle it out?



STORY & PHOTOS BY KEVIN HETMANSKI

ROAR holds national events at different locations around the U.S., and this year, the ROAR Off-road Mod Nats took place at RC Madness in Enfield, CT. This event was important for two reasons: the winner can claim a national title under his belt; and since the race came just before the IFMAR Worlds in Italy, it gave the guys a little wheel time to try out some last-minute changes to their vehicles. I packed up my gear and headed to RC Madness to witness one of the best-run Nationals ever. Here's what went down.

RACE SPECS

LOCATION: RC Madness > Enfield, CT > rcmadness.com

PRIMARY SPONSORS: Radio Control Car Action magazine > Team Associated > Team Losi > Deans > Kyosho > Hitec Futaba > TSCM > Racers Edge

CLASSES: 1/10 2WD Mod Buggy > 1/10 4WD Mod Buggy > 1/10 Mod Truck

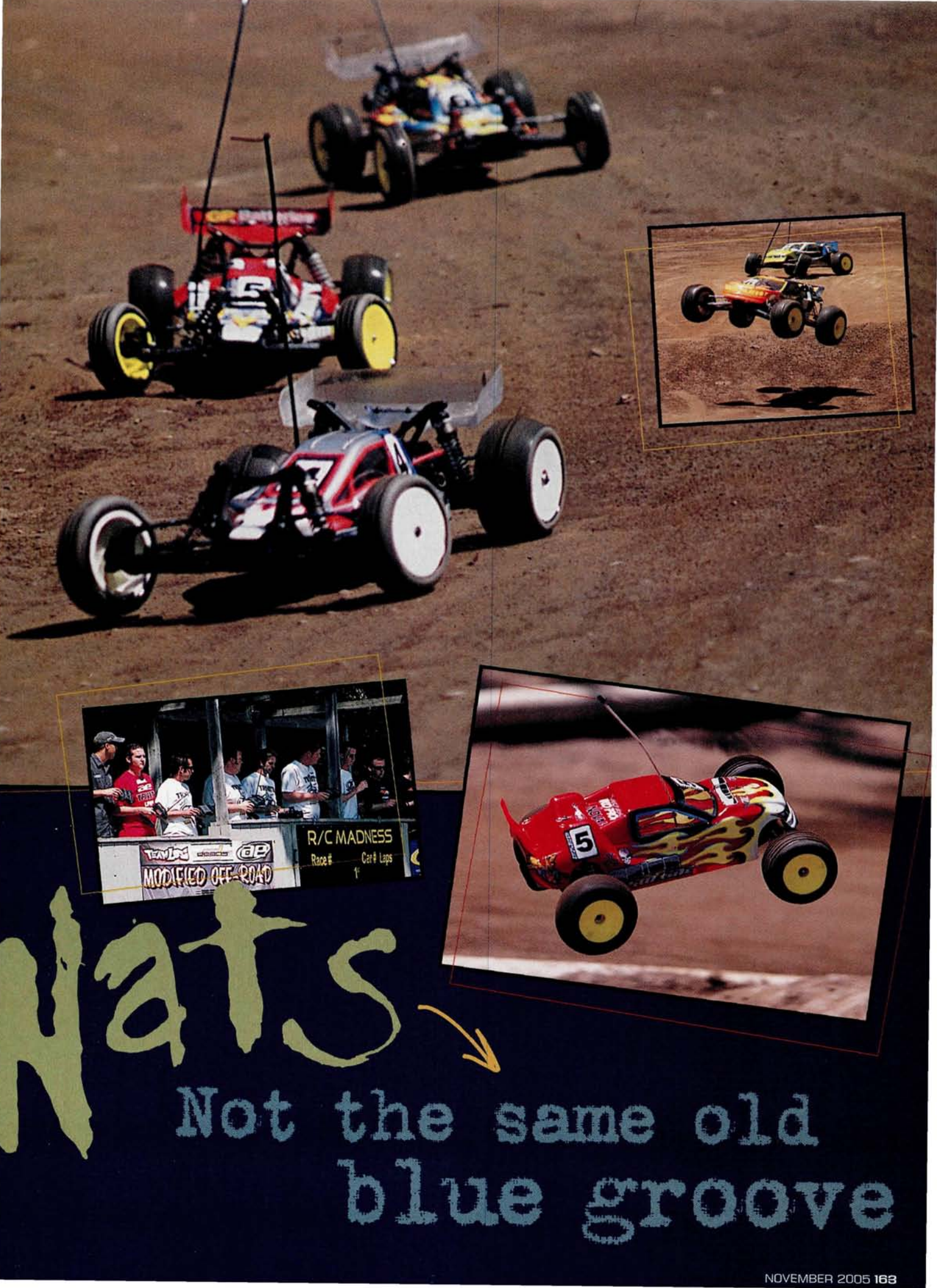
QUALIFYING: IFMAR style, 4 rounds

MAINS: Triple A-mains

2005

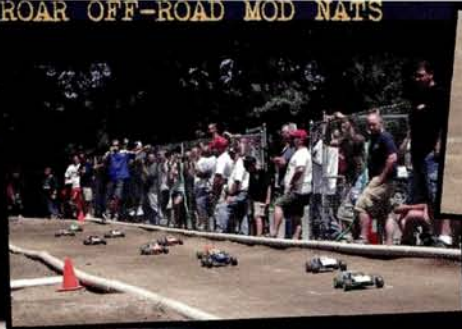
ROAR OFF-ROAD MOD





Nats

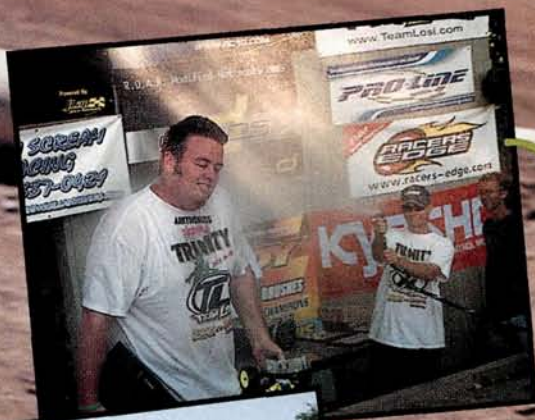
Not the same old
blue groove



A lot of good drivers in the truck class made it look as though anyone could take the TQ spot.



All the big boys came to town to run for the National title. Here, Matt Francis, Travis Amezcua and The Drake get ready to hit the drivers' stand for their next qualifiers.



Mike Truhe got a water bath from his teammates after accepting his TQ award for 2WD Buggy.



After every race, the track was watered down to keep the dirt as consistent as possible.

RC Madness

You may be familiar with RC Madness from some of the tests we have done in the pages of the mag. It's located just outside of Springfield, MA, in the town of Enfield, CT. This well-stocked hobby shop has an indoor carpet track, large outdoor on-road track and the big dirt track that the Off-road Nationals were held on. There is plenty of space indoors for pitting, and a tent was set up for the guys who enjoy the great outdoors. The 120x65-foot track was consistent all weekend and was watered after every race; the pros raved about the dirt all weekend long.

New Shocks for Team Losi

During the weekend, Team Losi ran some of their team vehicles equipped with their new bladder-style shocks that allow better control of shock compression and rebound. Some drivers used the new shocks, while others stuck with the original units. Mike Truhe won the Nationals with the new shocks on his car.

The Losi guys also took parts from past buggies and combined them to increase the performance of their BK2 buggies. They used the CR pivot with the BK1 transmission and BK2 hubs. These buggies were dialed.



Team Losi's top-filled shocks.

RACE CLASSES

2WD Modified

TQ: Mike Truhe > Team Losi

Winner: Mike Truhe > Team Losi

Team Losi's Mike Truhe was the man in qualifying when he picked up the TQ spot for the start of the Triple A-mains. Team Associated's Ryan Cavalieri wanted the win badly and challenged Truhe hard, but there just wasn't enough time in the first two Mains to catch him. Truhe ran away with the 2WD National title after the first two Mains.

4WD Modified

TQ: Ryan Maifield > Team Associated/J-Concepts

Winner: Greg Hodapp > Team Losi/X-5

Ryan Maifield took the top qualifying spot with his J-Concepts BJ4 for the start of the 4WD Mains, and after he won the first, it looked as though he'd be a serious contender for the win. Greg Hodapp wasn't far behind him in that same Main, and it must have made him hungry for the win. He checked out in the last two Mains for the top spot in both and took home the hardware.

2WD Modified Truck

TQ: Travis Amezcua > Team Losi

Winner: Jared Tebo > Team Associated

A lot of good drivers in the truck class made it look as though anyone could take the TQ spot. Team Losi's Travis Amezcua started at the top but didn't last long after the Mains got under way. Team Losi's Truhe, still on fire from his win, held them off for the first Main win; however, he had some bad luck in the second Main, and this time, Maifield showed the guys who was the boss. But at the end of round three, Tebo took the win and the National title, thanks to his seventh, second and first-place finishes throughout the day.



TRACK TALK

Mike Truhe: It's about driving defensively. Trying to force errors, every two inches count.

Greg Hodapp: My last off-road win was at the 2003 nationals at the Tilyard. When you overdrive a surface like this, it will kill ya. If I need to charge to win, I'll charge.

Jared Tebo: If you have a good truck, you need to get to the front as fast as you can. You can bump and show them you are there and want to get around, but some are rougher than others.

Kyosho's Protos

Kyosho's Mark Pavidis raced some new Kyosho prototype buggies. First up was the Lazer ZX-5 4WD, which is loosely based on the Kyosho FW-05 and will have features such as ball diffs and a molded chassis; it's still too early to say exactly which of the prototype vehicle's features it will keep. It looked good on the track, and I'm sure we'll see one in the winners' circle when they hit the tracks.

Mark also drove a completely hand-built prototype buggy that may or may not make it into production and doesn't even have a name! I couldn't get a chassis shot of the car without taking a beating, but I got a close look at the ride, and it was pretty trick; and it was hard to believe that someone had taken the time to hand-fabricate all those parts.



"This is a 50/50 project between Japan and me."
—Mark Pavidis

Spec Tires

Associated, Losi, X-5 and Kyosho decided to run spec tires on their vehicles. This was done to control costs and level the playing field on the pro side of the race. Other racers were allowed to run any tires they wanted. Tires used were:

2WD

Front: open
Rear: Pro-Line
M3 Holeshots

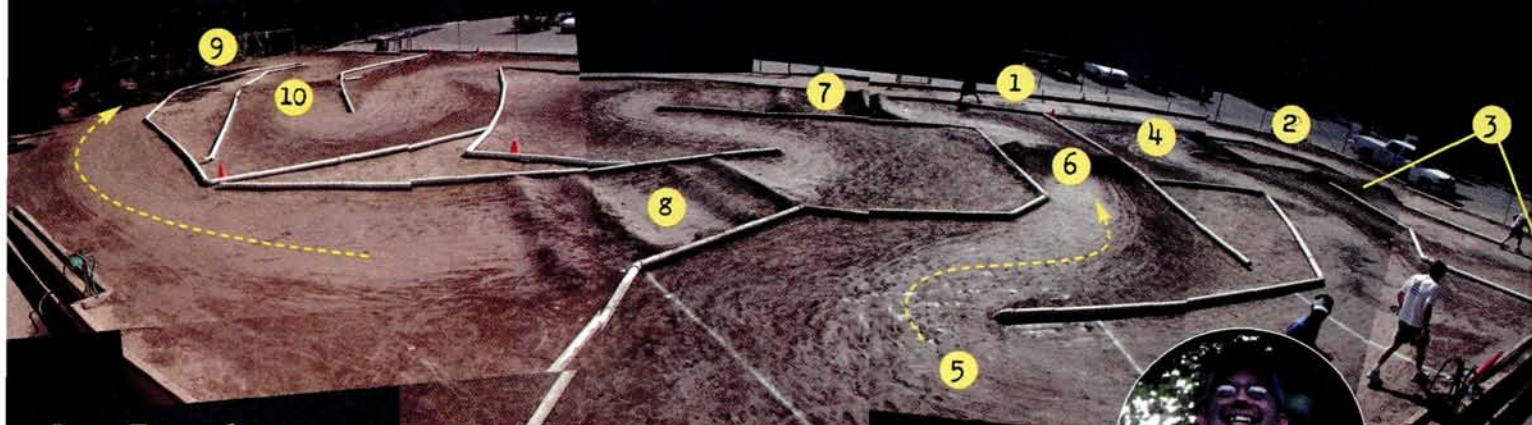
4WD

Front: Team
Losi Red
Blockheads
Rear: Team
Losi Red
X-2000

Truck

Front: Team
Losi Red
Directionals
Rear: Pro-Line
M3 Holeshots





On Track: Eric Desrosiers

I took some time to check out the track with Team Associated's Eric Desrosiers to get the fast line. Here are his comments:

The straight is pretty smooth off the start (1). The first turn has a severe rut, so you have to stay within two feet of the pipe (2). The 180 and small tabletop aren't bad (3). This double is one of the tougher parts of the track. You have to land perfectly to make the next turn (4). This section is pretty slick; a lot of the factory guys do nice, cool, controlled slides here (5). All you have to do is roll this tabletop (6). Here's a double that started out as a triple, but the drivers found it easier to double it and roll over the third jump (7). Then comes a double double, and the secret here is to make sure you land on the back side of each set, so you don't get sideways going into the sweeper (8). This section is the money-maker of the whole weekend. Everyone ended up getting sideways quite a bit (9). Then you pull a wheelie and come onto the double (10).



MOD TRUCK

Fin.	Qual.	Driver	Chassis	Radio	Batteries	Body	Motor/Wind	Servo	Speed Ctrl.
1	3	Jared Tebo	Associated FT T4	Futaba	Checkpoint	J-Concepts	Checkpoint 12x2	Futaba	LRP
2	2	Ryan Maifield	Associated FT T4	Airtronics M11	Reedy Real Time 2	INS	INS	INS	INS
3	9	Dave Montgomery	Associated FT T4	Airtronics M8	Reedy Real Time 2	Associated	Reedy Ti Worlds 10x2	Airtronics 94452	LRP Q2
4	5	Mike Truhe	Losi MF2	Airtronics M11	Trinity GP3300 Evo3	Losi MF2	Trinity Shock 14x3	Airtronics 94360	Novak GTX
5	4	Ryan Cavaleri	Associated FT T4	Airtronics M11	Trinity GP3300	J-Concepts	Trinity 12x2	Airtronics 94360	LRP
6	1	Travis Amezcua	Losi MF2	Airtronics M11	Trinity	Losi FXT	Epic 14x2	Airtronics 94360	LRP Q2
7	6	Adam Drake	Losi MF2	Airtronics M11	Trinity GP3300	Losi FXT	Trinity Shock 14x2	Airtronics 94360	Novak GTX
8	8	Billy Easton	Losi MF2	Futaba	Trinity	Losi MF2	Epic 14x2	Futaba	Novak GTX
9	10	Billy Fischer	Losi MF2	JR R-1	Team Orion GP3300 SP2	Losi MF2	Orion 13x2	JR 88005	Novak GTX
10	7	Matt Francis	Losi MF2	Airtronics M11	Trinity GP3300	Losi FXT	Trinity 14x3	Airtronics 94360	LRP Q2

2WD MOD

1	1	Mike Truhe	Losi Triple-X BK2	Airtronics M11	Trinity GP3300 Evo3	Losi BK2	Trinity Shock 14x3	Airtronics 94360	Novak GTX
2	3	Ryan Cavaleri	Associated FT B4	Airtronics M11	Trinity GP3300	J-Concepts	Trinity 14x2	Airtronics 94360	LRP Q2
3	4	Ryan Maifield	Associated FT B4	Airtronics M11	Reedy Real Time 2	INS	INS	INS	INS
4	2	Travis Amezcua	Losi Triple-X BK2	Airtronics M11	Trinity	Losi BK2	Epic 13x4	Airtronics 94360	LRP Q2
5	5	Billy Easton	Losi Triple-X BK2	Futaba	Trinity	Losi	Epic 14x2	Futaba	Novak GTX
6	9	Jared Tebo	Associated FT B4	Futaba	Checkpoint	J-Concepts	Checkpoint 12x2	Futaba	LRP
7	7	Adam Drake	Losi Triple-X BK2	Airtronics M11	Trinity GP3300	Losi BK2	Trinity Shock 14x2	Airtronics 94452	Novak GTX
8	6	Jesse Robbers	Losi Triple-X BK2	INS	SMC 3300	Losi BK2	Fantom 12x2	INS	Novak GTX
9	10	Matt Francis	Losi Triple-X BK2	Airtronics M11	Trinity GP3300	Losi	Epic 14x2	Airtronics 94360	LRP Q2
10	8	Dave Montgomery	Associated FT B4	Airtronics M8	Reedy Real Time 2	J-Concepts	Reedy Ti Worlds 12x2	Airtronics 94452	LRP Q2

4WD MOD

1	4	Greg Hodapp	X-5	Airtronics M8	Peak 3300	X-5	Peak 9x1	Airtronics 94357	Novak GTX
2	1	Ryan Maifield	BJ4	Airtronics M11	Reedy Real Time 2	INS	INS	INS	INS
3	3	Mike Truhe	Losi Triple-X4 G+	Airtronics M11	Trinity GP3300 Evo3	Losi BK2	Trinity Shock 12x2	Airtronics 94360	Novak GTX
4	2	Ryan Cavaleri	BJ4	Airtronics M11	Trinity GP3300	J-Concepts	Trinity 11x2	Airtronics 94360	LRP Q2
5	10	Adam Drake	Losi Triple-X4 G+	Airtronics M11	Trinity GP3300	Losi	Trinity Shock 11x2	Airtronics 94452	Novak GTX
6	7	Jared Tebo	BJ4	Futaba	Checkpoint	J-Concepts	Checkpoint 11x2	Futaba	LRP
7	6	Travis Amezcua	Losi Triple-X4 G+	Airtronics M11	Trinity	Losi	Epic 12x2	Airtronics 94360	LRP Q2
8	8	Matt Francis	Losi XX4	Airtronics M11	Trinity GP3300	Losi	Trinity 11x2	Airtronics 94360	LRP Q2
9	5	Billy Easton	Losi XX4	Futaba	Trinity	Losi HW	Epic 12x2	Futaba	Novak GTX
10	9	Billy Fischer	Losi XX4 WE	JR R-1	Team Orion GP3300 SP2	Losi	Orion 10x2	JR 88005	Novak GTX

INS=INFORMATION NOT SUPPLIED BY DRIVER

LRP VS SPHERE

Orange vs. Blue

A NUMBER OF MANUFACTURERS offer brushless power systems for cars, but the two that stand out above all the others are Novak and LRP. Novak devoted a lot of time and R&D energy to honing brushless-motor technology into a no-compromise system designed specifically for cars. The result was the Super Sport speed control and SS-series motors, which met with positive reviews. Then LRP trumped the orange giant with its Sphere system, which not only delivered sensor-based brushless-motor performance to rival Novak but could also operate brushed motors. But no technological salvo goes unanswered for long in the RC biz, and now Novak has a brushed/brushless system of its own—the Super Sport Plus. We've reviewed the LRP and Novak systems independently, but now it's time to put them on the track side by side to see which is truly the best.

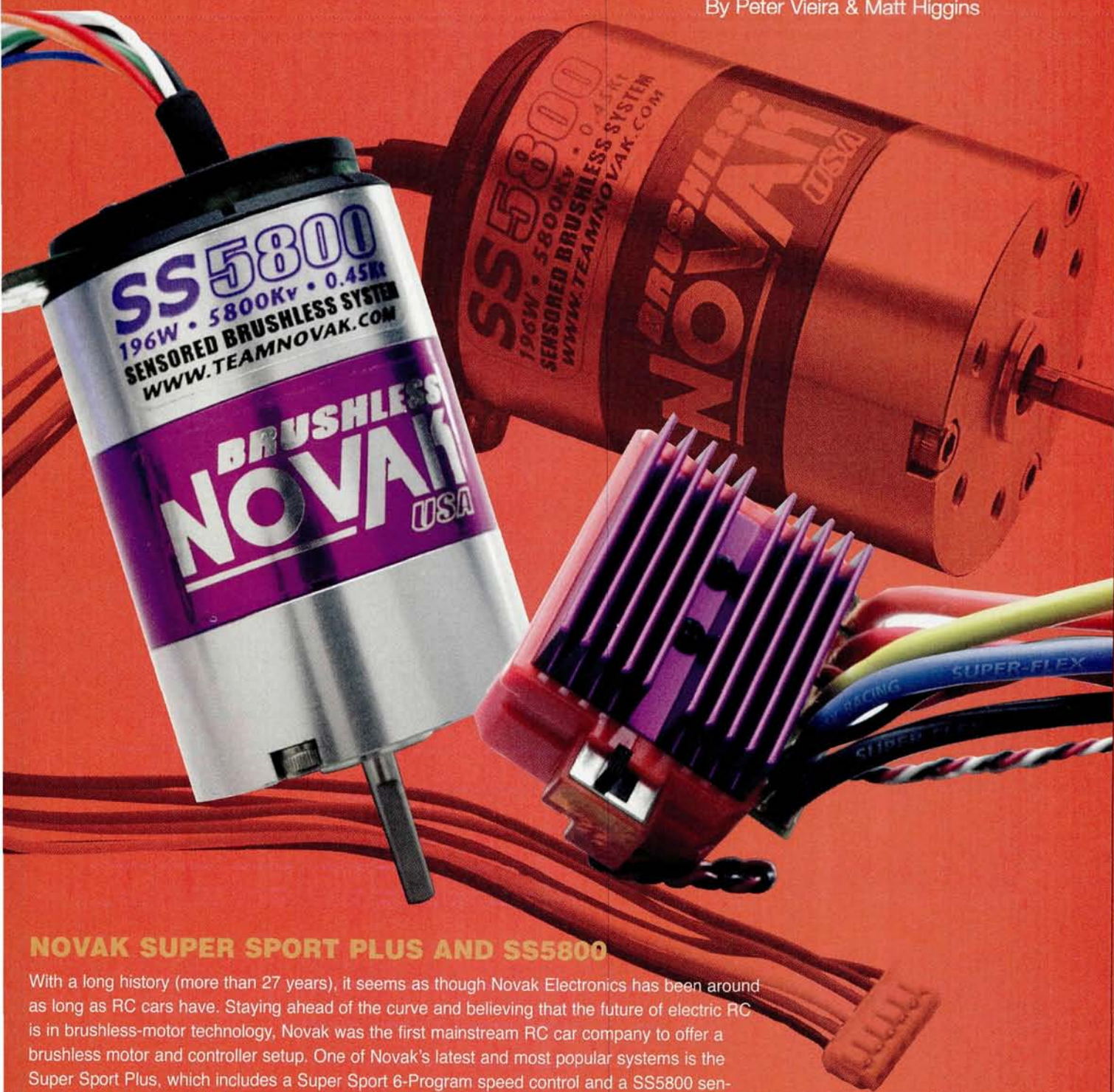
LRP SPHERE AND REEDY NEO ONE

LRP made headlines when it announced plans to partner with Reedy on a brushless motor project, but the real shocker came later, when it was announced that the LRP system would also operate brushed motors. By eliminating the instant-obsolescence factor for brushed motors, racers' biggest barrier to going brushless became a nonissue. And the Sphere speed control is indeed race-ready. It features adjustable "punch control" with "low-grip," "Sportsman" and "modified" settings as well as adjustable initial brake and automatic brake (drag brake). Like the Novak controller, the Sphere posts exceptional performance numbers for brushed-motor use; there isn't a class you can't race it in, thanks to its 7-turn motor limit and ultra-low on-resistance.

PHOTOS BY DERON NEBLETT

NOVAK SUPER SPORT PLUS

By Peter Vieira & Matt Higgins



NOVAK SUPER SPORT PLUS AND SS5800

With a long history (more than 27 years), it seems as though Novak Electronics has been around as long as RC cars have. Staying ahead of the curve and believing that the future of electric RC is in brushless-motor technology, Novak was the first mainstream RC car company to offer a brushless motor and controller setup. One of Novak's latest and most popular systems is the Super Sport Plus, which includes a Super Sport 6-Program speed control and a SS5800 sensed brushless motor. The Super Sport speed control can control brushed and brushless motors and be prewired to the included brushless motor (no soldering is needed). Besides offering RPM-limiting for sportsman classes and reverse-lockout for racing, the Super Sport has adjustable brakes (minimum and drag), deadband and minimum drive.

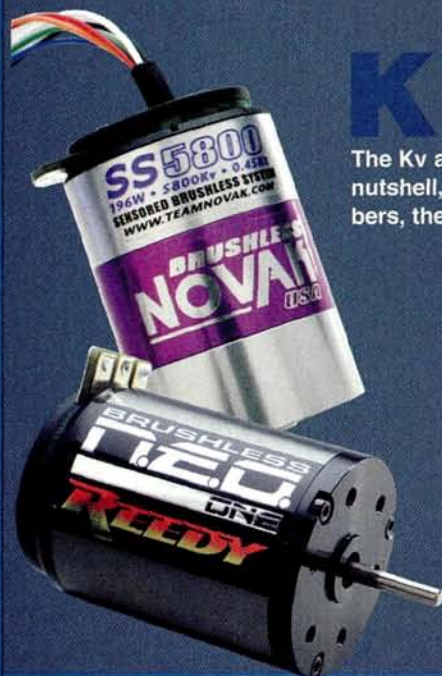
SPECIFICATIONS

SPEED CONTROL

Dimensions	NOVAK SUPER SPORT PLUS 1.3x1.7x1 in. (33.5x44.4 x26.7mm)	LRP SPHERE 1.2x1.5x.6 in. (31x37.6x14.9mm)
Weight (w/out wires)	1.7 oz. (48.1g)	0.9 oz. (24.5g)
Input voltage	4 to 7 cells	4 to 7 cells
BEC	6V/3V	5.5V
Power wires (gauge)	14	16 and 13 (two wire sets included)
Motor limit (brushed/brushless)	12-turn/225W	8-turn/6-turn
Connectors (battery/motor)	Tamiya/none	Tamiya/bullet
Price (varies with dealer)	\$185	\$200

MOTOR

Kv	NOVAK SS5800 5,800rpm/V	REEDY NEO ONE 7,700rpm/V
Kt	0.45 oz.-in./A (3.17nm/A)	0/49 oz.-in./A (3.53nm/A)
Power rating	196W	263W
Brushed equivalent	8-turn	9-turn
Price (varies with dealer)	\$100	\$100



KV & KT WHAT THEY ARE AND WHY THEY MATTER

The Kv and Kt values are important brushless-motor specs, but what the heck do they mean? In a nutshell, Kv is the motor's rpm rating, and Kt is its torque rating. The bigger the Kv and Kt numbers, the more speed and power you'll have. Here's the scoop, straight from Novak:

KV

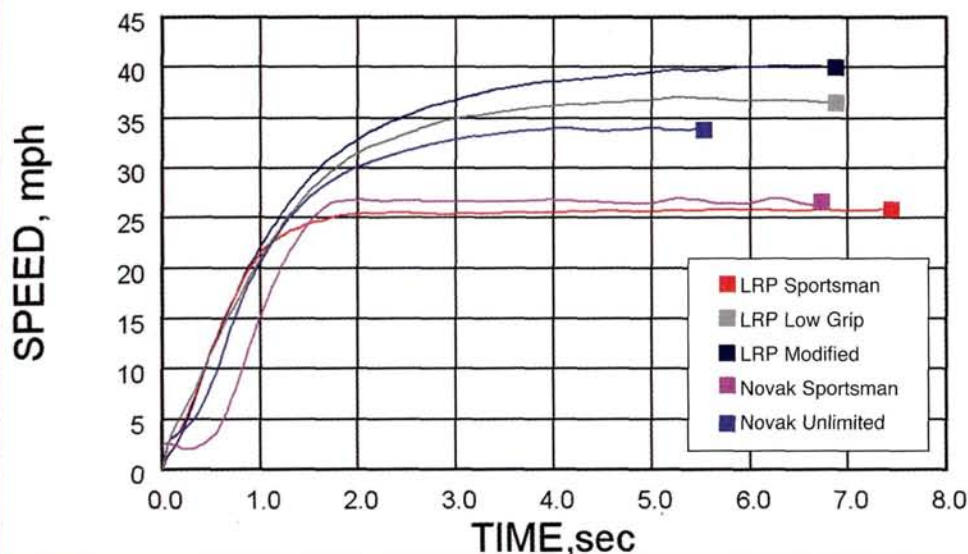
This number is the motor voltage constant expressed in rpm/volt. This indicates how fast the motor will turn for a given voltage (given there is no internal resistance). As an example, consider a Kv rating of 4,300 rpm/volt. If a 6V battery pack is used, the motor's rpm would be 25,800 ($6 \times 4,300 = 25,800$).

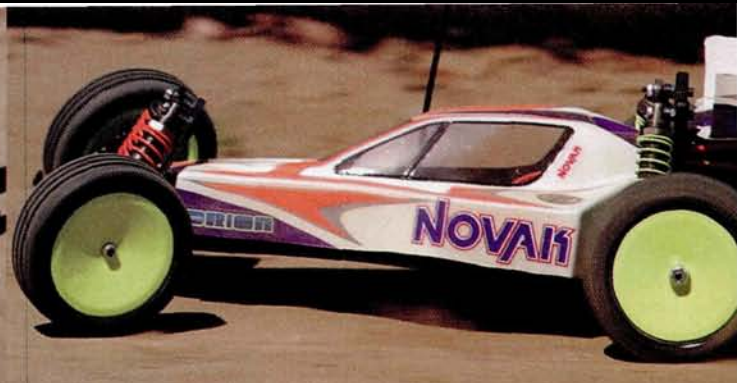
KT

This number is the motor torque constant expressed in ounce-inch of torque per amp of current. This number is the amount of torque a motor produces per amp of current draw. Consider a Kt rating of 0.45 oz.-in./amp. If the motor draws 5 amps, it would produce 2.25 oz.-in. of torque ($5 \times 0.45 = 2.25$).

RADAR TESTING

To test each speed control's factory power programs, we radar'd the buggies. Note that both setups had similar top speeds with the Sportsman settings (LRP 25.9 mph, Novak 26.9 mph), which limit rpm to 24,000. The LRP's Low Grip and Modified settings posted higher top speeds (37.1 and 40.1mph respectively), while Novak's Unlimited profile bumped speed to 34 mph. But remember, the Reedy NEO-One is a hotter wind than the Novak SS5800 motor, so comparing their speeds is more like "apples vs. oranges" than "blue vs. orange."





TEST CARS: TEAM LOSI TRIPLE-X BK2

Naturally, we used identical cars to test the brushless systems. To best reveal the performance characteristics of each system, we wanted vehicles that could go on- or off-road and required precise throttle feel. Two-wheel-drive buggies were the perfect choice, and

we picked one of the best: Team Losi's Triple-X Kinwald Edition 2. We built two cars with the box-stock suspension settings and equipped both with Futaba 2PL radio systems and S3305 servos. Team Orion supplied matching 3300mAh RDS team-spec batteries.

TESTING

THROTTLE FEEL

Both brands got high marks for precise power delivery and smooth feel, but the LRP is the smoothest of the smooth across all its settings. The Novak system felt like it had a harder top-end kick during off-road testing, where the minimal traction made any spike in power delivery show up as wheelspin. In high-grip testing (namely, our on-pavement radar runs), the increased traction made the power delivery feel more linear.

Advantage: LRP

BRAKING FEEL

Both systems got high marks, with fine control near maximum braking power and useful drag-brake settings. The Novak system is more adjustable with 10 settings for minimum and drag brake, but the LRP seems just as effective with "only" three settings for minimum and drag brake. We can't really feel the difference between 25 percent drag brake and 30 percent drag brake, but maybe you can (and that probably makes "you" Brian Kinwald).

Advantage: Tie

ADJUSTABILITY

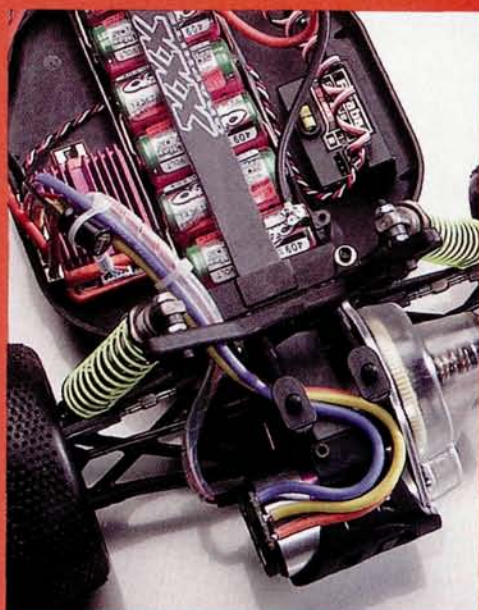
Both speed controls have more settings than you're likely to use, but more is more, and Novak has the most. The LRP system has three values for "punch control," initial brake (aka minimum brake) and automatic brake (aka drag brake) power; the Novak system has 10. Novak also scores with more adjustment parameters; in addition to minimum brake and drag brake, the Super Sport controller also has adjustable minimum drive and deadband.

Advantage: Novak

EASE OF USE

Installation and programming access all fall under the "ease of use" heading, and LRP scores on both counts. The smaller, less chunky Sphere is easier to fit in close quarters (although this was a nonissue in our roomy Triple-X buggies), and it includes extra wire for hard-wiring fans, plus bullet connectors for a brushed motor so sport drivers won't have to solder. You'll definitely want to keep the manuals handy with both systems, but the Sphere is just slightly simpler to use (although both are easy to operate). It's also worth noting that the Sphere simply has fewer adjustment possibilities, which may be a plus or a minus depending on how much you like to fiddle. And for that reason, we'll call this one a tie.

Advantage: Tie



2ND OPINION

In addition to wheeling the cars ourselves, we tapped fast locals Jason Broule (who also happens to own Xtreme RC Raceway) and Nick Leone (a good guy who is hard to beat at Xtreme RC Raceway).



NICK LEONE

» LRP SPHERE/REEDY NEO-1

The LRP setup feels extremely linear; the low-end response is as smooth as anything I've driven. I drove the SS5800 before and felt it had too much power, but the LRP system changed my outlook on brushless. The brakes were excellent, top speed was "wow!"—you gotta hang on when you hit full throttle!

» NOVAK SUPER SPORT PLUS/SS5800

Profile 1 was too aggressive for my liking; it was insane past 1/2 throttle, and I had a hard time preventing the car from stepping out. But in Sportsman, it had much more linear response and was very driveable—that setting cured the explosive-power problem. It's the better setting for a loose track like Xtreme. But overall—not quite as linear as the LRP system.



JASON BROULE

» LRP SPHERE/REEDY NEO-1

Supersmooth, great rpm, very driveable—excellent overall. I prefer the maximum-punch "modified" setting. I wouldn't use the milder settings myself, but it's good that you can adjust it. For another driver, those settings might be better. The only thing I don't like is the stick-on heat sink—it's a little hokey. If it needs a heat sink, better to build it in.

» NOVAK SUPER SPORT PLUS/SS5800

High-power, abrupt—the way I like it but not as smooth as the LRP. In Sportsman mode, it's much smoother; better for someone who's less precise with his trigger finger. You can feel it cut off if you bump the rpm limit in Sportsman, but if you can rev it that high, you really shouldn't be in that mode anyway. Again, it's good that you can dial it down, but I prefer full power.

WHAT ABOUT BRUSHED PERFORMANCE?

Both the Novak Super Sport Plus and LRP Sphere controllers can operate brushed motors, but we didn't perform side-by-side testing with brushed motors for this go-around. We figured any brushless buyer would be most interested in brushless-mode performance, and brushed capability is an added bonus. For brushed-motor testing, see our previous reviews on each controller. The Novak Super Sport Plus was reviewed in the July '05 issue, and the LRP Sphere was wrung out in the January '05 edition.



WHO WINS?

There's nothing worse than a wishy-washy "everybody wins!" ending, but these systems really are close, and we just gotta call it a tie. That doesn't mean the systems are equal (if you read the article and didn't just skip to the end, you already know how different the systems are), but they are equally good. But let's not forget about price; the LRP and Novak systems are within \$15 of each other when you purchase the speed controls and motor separately, but Novak also gives you the option of buying the Super Sport Plus and SS5800 motor as a combo for about \$230—that's a savings of \$55. Hmmm, do you think we'll see a similar deal from LRP and Reedy? ■

Rebuild Shocks

8 STEPS TO SMOOTH

Few components on an off-road vehicle work as hard as the shocks. Whether they're countering cornering loads, softening bump forces, or soaking up jump landings, the shocks are always pumping away. That's why it's important to keep them in tiptop shape with fresh seals and fluid. Rebuilding is easy and will give your car that just-built feeling on the track.

STEP 1. REMOVE AND INSPECT THE SHOCKS

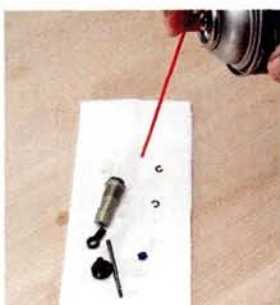
Wipe the shocks down so you can give them a good eyeballing. The shortlist of things to look for includes weeping around the seals, bent or scored shafts, dings in the shock body, and cracked rod ends. Any of these problems are cause to replace the damaged parts.



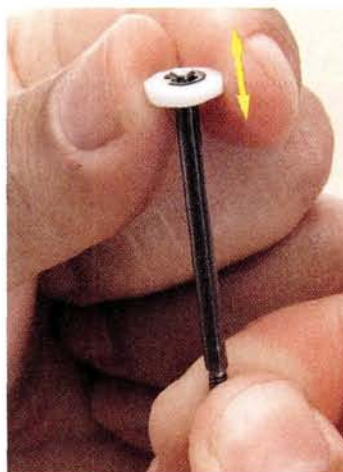
A toothbrush is perfect for cleaning shocks.

STEP 2. DISASSEMBLE AND CLEAN THE PARTS

Drain out the shock fluid, and completely disassemble the shock, including the piston and shaft. If you have Losi shocks, pop open the seal cartridge and remove the O-rings. Roll the shaft on a perfectly flat surface; if it's bent, you'll feel it wobble (and you should toss it). Toss the O-rings regardless of their condition; new rings are cheap leak insurance. Spray everything down with denatured alcohol, and you're ready to rebuild.



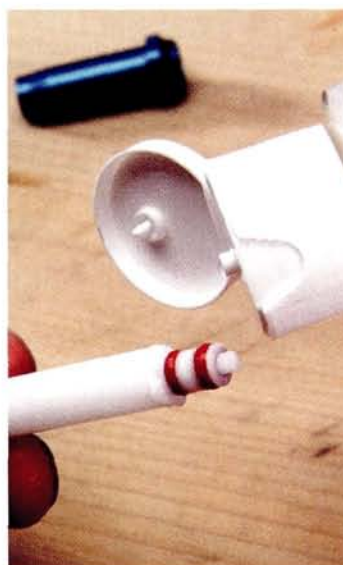
Roll the shock shaft to check its trueness.



STEP 3. INSTALL THE PISTONS

After you've snapped the E-clips into place, try to move the piston up and down. The piston should not have any play between the E-clips. If there is play, you can shim the piston or slightly bend one of the E-clips to take up the slack.

Try to jiggle the piston; it should not float between the E-clips.



Lube the seals before you install them.

STEP 4. INSTALL THE SEALS

At the very least, coat the seals with shock fluid before you pop them into the cartridge (if you have Losi shocks) or load them into the shock body. For best performance, Associated's Factory Team Green Slime seal lube is the hot setup. Smear the green stuff over the seals, and the shocks will have less stiction and form a better seal against the shafts. If the shock uses an O-ring seal under the cap, install it now.



If your shocks have internal spacers, install them now.

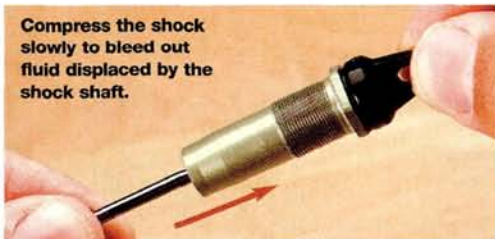
STEP 5. INSTALL THE PISTON/SHAFT ASSEMBLY AND FILL THE SHOCK

Make sure you remember to reinstall any internal spacers, and lubricate the tip of the shaft before you pass it through the seals. Now you're ready to fill the shock. To fill a top-filled shock, pull the shaft to full extension, and then pour the fluid in until the shock is half full. Release any trapped air bubbles by slowly twisting and raising the shock shaft. When all the bubbles have escaped, you can fill the rest of the shock. For Losi shocks, fill the body until the fluid reaches the threads.



Fill halfway, release trapped air, and then top off.

Compress the shock slowly to bleed out fluid displaced by the shock shaft.



out excess fluid (if fluid doesn't flow out and the shaft is hard to compress, loosen the cap until the fluid does flow out). If you have Losi shocks, thread the cartridge/piston/shaft assembly into the shock body with the shaft fully extended; then bleed the shock as described for top-fill shocks.

With the cap tight, the shaft should extend about halfway after being compressed.



STEP 6. BLEED THE SHOCKS

Fill your top-filled shock until the fluid forms a dome; then screw the cap on—but not completely. Leave it about “one turn” loose; then compress the shock shaft to bleed

STEP 7. TEST THE SHOCKS

With the cap or cartridge fully tightened, compress the shaft. If you can't compress it fully or it's very hard to compress at the end of its travel range, you need to

bleed more fluid out of the shock. Ideally, the shock shaft should compress easily and then extend itself about halfway when it's released.

STEP 8. REINSTALL THE SPRING, PRELOAD COLLARS, PERCH AND ROD END.

That's it, the job is done. Now you can do it all again for the other three shocks! ■



Done.

DARK THUNDER MEGA DRAGSTER

100% BUILT RACE READY RADIO CONTROL TOP FUEL DRAGSTER WITH ENGINE AND RADIO INSTALLED

0 to 60 in Under 3 Seconds!

SPECIFICATIONS:

Length: 30"	Front Track: 7.1"
Width: 7.75"	Rear Track: 7.75"
Height: 5"	Ground Clearance: 0.35"
Wheelbase: 24.5"	Weight: 53 oz.

RECOMMENDED

MTC1659
Q-59 MEDIUMHOT
GLOW PLUG

#1 ALL
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MACHINED ALUMINUM FRONT RIMS
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1.6HP Q1.6 ENGINE &
CUSTOM TUNED EXHAUST
SYSTEM FOR TOP RPM SPEED



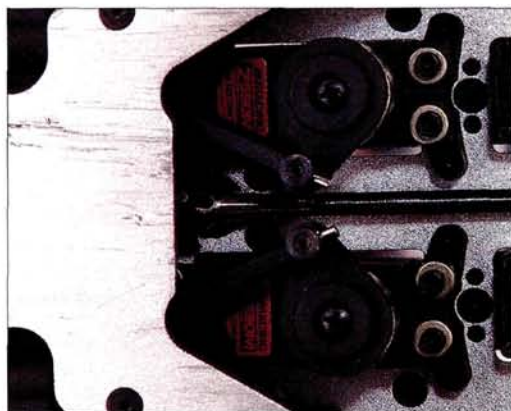
2 SPEED TRANSMISSION FOR BEST
OFF THE LINE AND TOP SPEED



CHEAP SPEED

8 ways to get lighter, tougher and faster

So you've decided to start racing your monster truck. Racing is all about going fast, but don't start pricing out hotter engines and other expensive upgrades just yet. Unlike the who's-fastest parking-lot grudge matches you've been in with your buddies, going fast on a track is not about sheer speed and having the most power. It's about getting from corner to corner fastest and not who can hang on the longest for an extra mile per hour. There are lots of low-cost and no-cost tricks to help you get around the pipes faster—no engine upgrade required.



Dual servos deliver double the power, but also double the weight. If you replace the dual-servo setup with a more powerful single servo, you can trim 2 or 3 more ounces from your truck.

DITCH THE DUAL SERVOS

Do you really need two servos steering your truck? The Traxxas Revo and Team Losi LST come with two powerful servos, but you may be able to get away with just one. You'll reduce the weight of the truck, and your receiver pack will last much longer. If the single servo isn't up to the task, upgrade to a more powerful unit; it's cheaper than you think. For example, Futaba's 124 oz.-in. S3305 sells for around \$50.

INSTALL A RECHARGEABLE RECEIVER PACK

The 4-cell AA battery holder will get you up and running fast, but servo performance quickly deteriorates because the alkalines lose voltage quickly, and replacing them as often as you should is expensive! Pick up a 5-cell rechargeable receiver pack for your rig. These packs maintain their voltage much longer, so servo performance doesn't vary during your run, and the pack will quickly pay for itself. When shopping for a receiver pack, be sure to pick one that will fit your monster truck. The folks at your local hobby shop can help you choose the correct pack.



Alkaline batteries will get your truck up and running fast, but replacing them gets expensive. Replace them with a 5-cell rechargeable pack, and you'll have more run time and power, and save money too.

BEEF UP THE SHOCK TOWERS AND BODY MOUNTS

Anytime you race something, you're going to crash it. Parts that need to be replaced often are the shock towers and body mounts; it's almost guaranteed you'll bend or brake these items. When they pop, replace them with stronger aftermarket parts (if available for your truck). RPM makes super-tough nylon shock towers and body mounts that don't add significant weight. Or, if you can stand a little added weight, use



When you flip your truck upside down, plastic shock towers and body mounts are the first things to break. Aluminum upgrades are a good choice here.



Less weight is always good when hitting the track. Replace what you can with lighter parts, and remove parts that aren't needed to run your truck. I ditched the radio boxes and replaced the aluminum chassis with a carbon-fiber one to lose as much weight as possible, and removed the bumpers to make my Revo even lighter.

aluminum parts. Heavy and running beats lightweight and broken, so don't get too wrapped up over the weight of aluminum, if that's what it takes to stay tough.

LOSE WEIGHT

The less your truck weighs, the faster it will be, and all monsters have fat that can be trimmed. Popular diet areas include:

■ **Transmission.** Install a forward-only kit in your tranny (if available for your truck). This allows you to remove all the gears needed for reverse operation and the servo that controls it.

■ **Lighter tires.** This is a biggie, since rotating mass is what most affects performance. If you swap out a set of heavy monster meats for lightweight racing tires with a track-ready tread, you'll not only hook up better, but you'll also feel a big boost in acceleration.

■ **Trim, trim, trim.** If your truck has styling doodads that don't serve a performance function, remove them. You can also cut down or remove radio boxes, as long as they aren't stressed chassis parts.

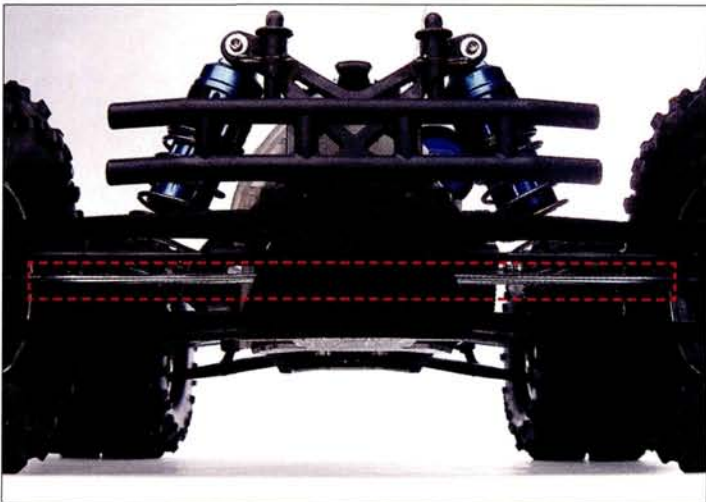
■ **Aftermarket stuff.** There are grams to be shaved by swapping steel parts for aluminum, aluminum parts for carbon fiber or plain plastic parts for molded-graphite versions. But beware: durability may suffer, and the cost per gram can be very pricey.



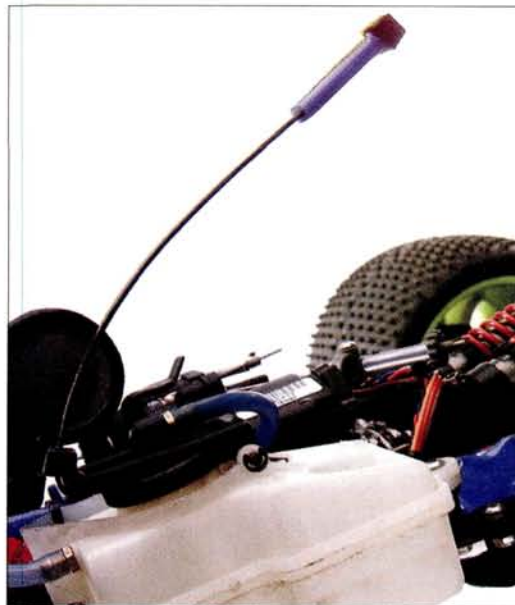
The stock servo-savers on most monster trucks are very softly sprung. A stronger one such as Kimbrough's no. 121 heavy-duty model will make your truck feel much tighter in the turns.

INSTALL A STRONGER SERVO-SAVER

Most monster trucks come equipped with a softly sprung servo-saver to give maximum protection to the stock plastic-gear servo. If you have installed a metal-gear servo, you can install a more stiffly sprung servo-saver without worrying about breaking your servo's drivetrain (I like the Kimbrough model 121). You won't believe the improvement in steering precision and responsiveness.



Get everything in the truck as low as you can, and the easiest way to do that is to lower your truck's ride height. "Bones level" is a good place to start.



This handle is made of zip-ties and fuel tubing, and it makes it much easier to open the fuel tank while the body is on the truck.

FASTER FUELING

The more time you spend filling your tank in the pits, the more positions you'll lose on the track. Make a handle for the fuel tank out of a few zip-ties and some fuel tubing to give your pit dude something to grab when you come in for a fill-up. I almost left this tip out, thinking "everybody knows this trick already." And yet, I still see guys trying to pry open their fuel tanks with their fingertips every Sunday.

LOWER THE CG

Lowering the truck's center of gravity will enhance its handling on the track. The easiest way to lower your truck's CG is to lower its ride height (drive axles level is usually a good setting). You can also move the receiver pack to the underside of the chassis of some "lifted" trucks.

USE FUEL WITH MORE NITRO

If more speed is what you need, buy fuel with a higher nitro content (but if you already run 30 percent, that's enough). More nitro will give your engine the

Yup, it's just that easy; going from 20 to 30 percent nitro is a quick way to get more speed out of anything with a nitro engine.

boost it needs to make your truck fly around the track. Just remember that once you go up in nitro content, you really shouldn't go back down. The higher operating temperature caused by the higher nitro content will change the fit of the piston and sleeve, and the truck may not run as well on lower-nitro fuel. ■



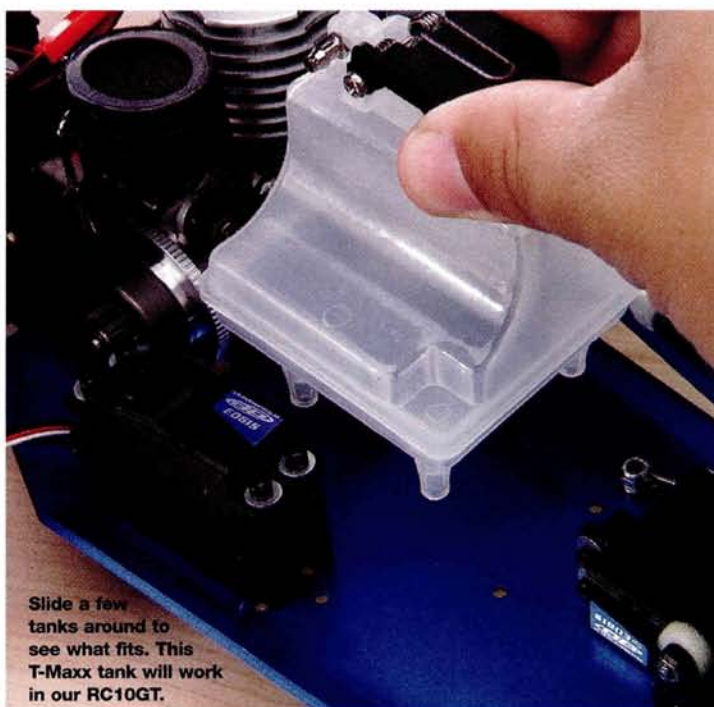
©FIND IT

»» Go to page 217 for manufacturers' contact information.

Install a Larger Fuel Tank

FILL 'ER UP

If you want to increase your fuel capacity for more run time, you could add a fuel-filter and run longer fuel lines, but nothing beats a larger fuel tank. This ultimate capacity increaser may be off limits for tightly packed nitro chassis, but if you can see daylight between the sides of the tank and the rest of the chassis components, you might be in luck. Here's how to make the upgrade.



Slide a few tanks around to see what fits. This T-Maxx tank will work in our RC10GT.

STEP 1. SELECT A TANK

This is where keeping things friendly with the local shop pays off. Remove the tank, and take your tankless chassis to the shop. Ask if you may test-fit a few tanks by placing them over the chassis, which you can do while they're still in their polybags. Two tips: make sure your vehicle is clean (so you don't get the tanks' packaging dirty), and hit the shop when it's slow. Avoid tanks with sumps that sit lower than the bottom of the tank. If you select one with a lowered sump, you'll either have to use spacers to raise the tank (and its CG—not good for handling), or make a large sump hole in the chassis (that's no fun).

DIY TANK MOUNTS

Some tanks have molded-in mounting bosses on the bottom, while others use tabs. If you're installing the tab type, you must either buy the factory tank mounts to go with it or make your own using body posts. Here's how:

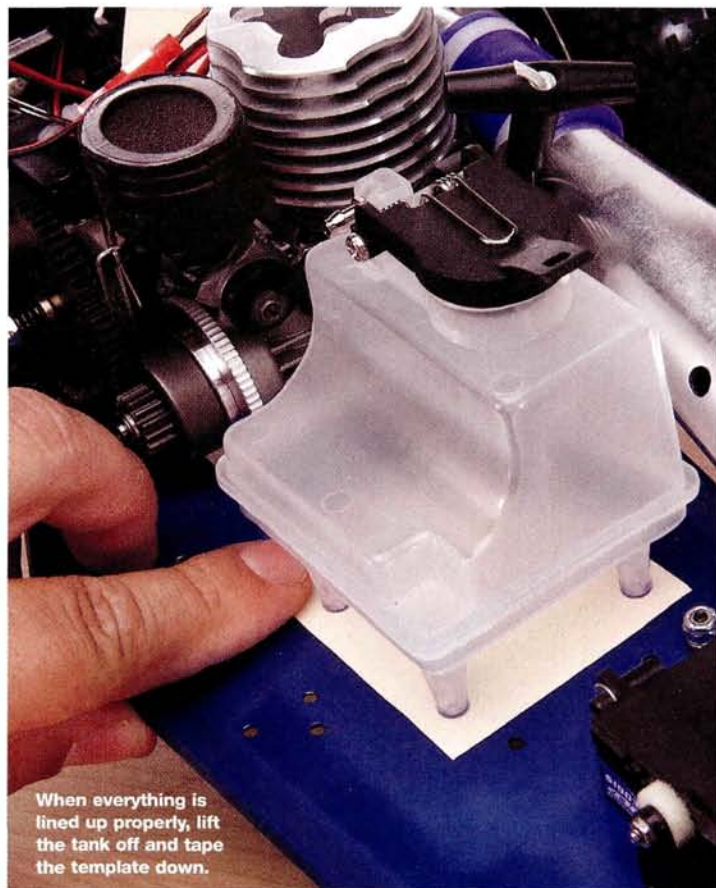
- 1. Measure the tab height.** Place the tank on your bench and measure to the bottom of the mounting tab.
- 2. Cut the body posts.** A Craftsman Accu-Cut is the perfect tool for this job, since it leaves a nice flat face on the post. Cut the posts to the length you measured in step 1.
- 3. Drill the posts for the tank screws.** A $\frac{5}{64}$ -inch hole is good for 4-40 or 3mm screws. To make a perfect hole, use a drill press and stand the post up precisely with a vise, or make a jig by drilling a hole in a piece of wood to hold the post.
- 4. Mount the tank.** Place O-rings between the tank and the mounts, and then tighten the screws until they just slightly crush the O-rings. Now you're ready to make a template.



If your tank has "feet," just stamp the hole locations using a magic marker.

STEP 2. MAKE A TEMPLATE

Use a piece of stiff paper or card to cut a template that is the same size as the tank, and mark the screw-hole locations. Slide it over the chassis until you have it where you want it, and then mark the screw holes. Now place the actual tank over the hole markings to make sure everything lines up properly and there's room for the fuel lines to exit without getting pinched against other parts or getting chewed up by the gears or the flywheel.



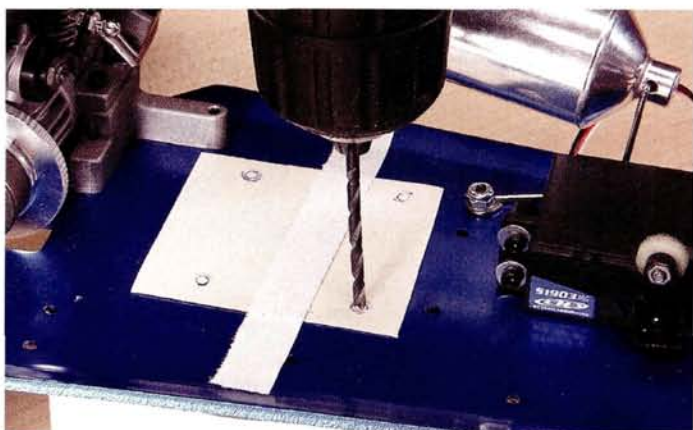
When everything is lined up properly, lift the tank off and tape the template down.

GO WITH THE FLOW

Before you commit to a tank location, make sure you're mounting it in the correct direction. It's all about the pick-up inside the tank: it must face the rear of the vehicle. If it's up front, the fuel will slosh away from it under acceleration, causing hesitation or stalling.

STEP 3. DRILL THE MOUNTING HOLES

A drill press is best, but a cordless drill will do the job; just make sure you hold it as close to vertical as you can eyeball. An $\frac{1}{8}$ -inch hole will let a 4-40 or 3mm screw pass through.



Put a block of wood (or photographer's tape—sorry, Deron) under the chassis to support the drill.

STEP 4. COUNTERSINK THE HOLES

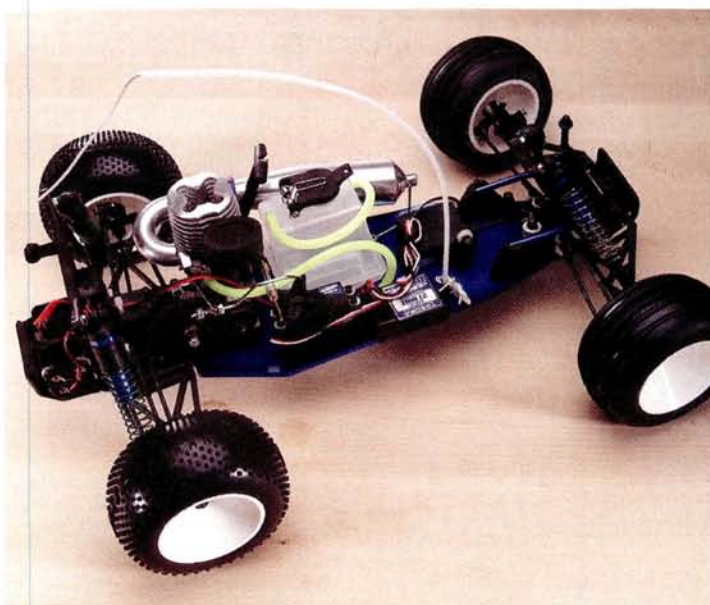
This is optional. If you want your chassis's underside to remain perfectly smooth, use a 100-degree countersinking bit to countersink the holes for flat-head screws. Don't overdo it, or you may enlarge the screw holes.

STEP 5. INSTALL THE TANK

Now, all you have to do is screw the tank into place, but before you fire those fasteners in, place an O-ring over each screw so that it will act as a cushion between the chassis and the tank. When you tighten the screws, just snug them up until they slightly compress the O-rings. Don't crush 'em.



O-rings under the tank's feet will reduce vibration and fuel foaming.



Install fuel lines, and the job is complete. Enjoy your longer run time! ■



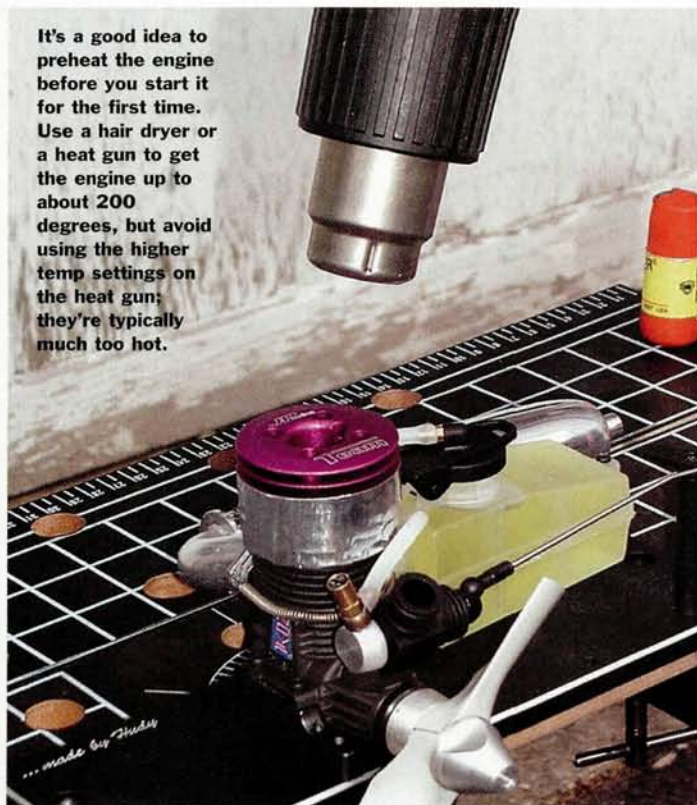
Engine break-in on the bench

Few subjects spark as much debate as that of nitro-engine break-in. There are several schools of thought about the correct technique to use. Some techniques have evolved to match improvements in engine design and manufacturing technology, but old-school methods are still used because

That's the way it has always been done. Regardless of opinion, there are basically just two ways in which a nitro engine can be broken in: with the engine mounted on a workbench or on a break-in stand and with the engine installed in a car. The latter is the most popular by a landslide, not because it's better but because it's a lot easier. When you break in an engine in a car, you don't need RC airplane-style starters, a break-in stand, a propeller, or an extra fuel tank. So why bother with a break-in stand? Well, there are always two sides to everything: a stand offers a more controlled environment for 2-stroke break-in. This Piston Power focuses on the hows and whys of breaking in an engine on a stand.



It's a good idea to preheat the engine before you start it for the first time. Use a hair dryer or a heat gun to get the engine up to about 200 degrees, but avoid using the higher temp settings on the heat gun; they're typically much too hot.



The break-in stand was first used years ago by model airplane guys when engines were much more unreliable, and it was risky to fly a plane during engine break-in. Most engines were ringed, and manufacturing tolerances varied widely compared with today's standards. An engine might run poorly until it was properly (and safely) broken in on a stand. RC cars tend to stay on the ground, so if the engine stalls or the mixture setting drifts, your machine isn't at risk of serious damage. Some smart car guys saw the value of using stands to "run their engines in," and they're now becoming more popular for RC car engine break-in.

BREAK-IN STAND BENEFITS

A stand allows you to run an engine at high rpm and under load without having it hurtling around a track. This means that you can more easily monitor its vital signs while you're breaking it in properly. The operative word is "properly." It's just easier to pay close attention to what's happening with an engine when it's running right in front of you.

Commercially available break-in stands range from simple, inexpensive wooden units right up to specialized machined-aluminum stands such as the one offered by Serpent (item no. 3400). To make a break-in stand you'd have to collect items such as a fuel tank, a prop (which you'll have to cut down and balance) and a stand for the engine. The Serpent break-in stand isn't cheap, but it includes everything in one box.



When you prepare to break in your engine on a break-in stand, cover most of the cooling fins of the cylinder head with foil tape. Too much cooling will defeat the purpose of a proper break-in.



If the engine doesn't reach operating temperature with a few fins exposed, you may have to tape up the entire head as shown.



Check the engine temperature regularly to be sure it stays in the ideal range. Ideally, it's best to stay between 200 to 250 degrees, but every engine is different. The engine rpm and temp should be steady; any significant changes mean the fuel mixture needs attention.

SHOULD YOU USE A BREAK-IN STAND?

—not if you aren't an experienced racer. The benefits are that you can closely monitor the engine and make instant adjustments. This is a plus for racers who run engines that cost much more than their cars. It isn't generally worth the hassle or expense of removing an engine from an RTR or mounting a sport engine on a stand for break-in. For the cost of a good break-in stand, you can buy quite a few piston and sleeve combos for sport engines. Additionally, the propeller whips around at over 20,000 rpm, and that could be a problem. Yes, the Serpent break-in stand comes with a propeller guard (not shown in the photographs), but it's still safer, easier and much less expensive to just mount your sport engine in your car—or, if you have an RTR, leave it in place—for break-in. Breaking an engine in on a stand improves the quality of the break-in.

HOW TO USE A BREAK-IN STAND

■ First, make sure that the engine is firmly attached to the stand. It will vibrate severely, so take nothing for granted in the bolt-tightening department. Be sure that the propeller clears the carburetor. The prop that comes with the Serpent break-in stand is notched because it would otherwise hit the carburetor on many engines. Make sure that the carburetor clinch nut is tight because a loose carb that clears the prop when the engine isn't running can quickly become one that *doesn't* clear it when the engine is running.

■ Wrapping the cylinder head in foil tape helps to keep heat in the engine. The spinning prop forces lots of air over the cooling head and tends to over-cool the engine. If you regularly read "Piston Power," you know that over-cooling an engine with ABC construction causes premature wear. The cylinder heads of modern competition engines already draw out so much engine heat that there's simply too much cooling with the airflow from the prop during break-in.

■ Clean the area around the engine break-in stand. There's no room to install an air filter on the carburetor because the propeller is so close that it wouldn't fit. This means that when you start the engine, if there's any swirling dirt, it could damage the engine. That's an expensive lesson to learn through experience! Also look to make sure that the engine is clear of flashing and any loose material that could be sucked into the carb.

■ Preheat the engine. This is critical early in the life of a good-quality engine. Heating the

engine expands the sleeve before the engine is even started, and that helps to prevent much of the wear a stone-cold engine is subjected to when it's first started. To crank a very tight engine over, you might have to preheat the engine block. Use a heat gun, but don't get too close to O-rings and plastic parts that heat might damage (you'd be surprised by how hot a heat gun can get).

■ Put two or three drops of fuel into the cylinder, and then prime the fuel system. The fuel in the cylinder helps to fire the engine up right away. This is important because the longer the engine turns over at low speed without the benefit of combustion heat, the more it will wear.

■ Finally, fire the engine up and let it run through a full tank of fuel. Check its cylinder-head temp to be sure it rises to more than 200 degrees F. For the first tank of fuel, keep the engine at around ¼ throttle to give the rod bushings a chance wear in for a few minutes without being fully stressed. Then let the engine rev to a pretty high rpm to avoid what we call "stiction." This is when a brand-new piston gets stuck in the sleeve because of its tight interference fit. The piston is more likely to stick in the sleeve when the engine is at lower rpm, and that's why most experts suggest that you throttle up during break-in to help prevent stiction. Let the engine completely run out of fuel, and then let it cool to room temperature. After that, follow the same procedure again. Allowing the engine to cool completely is known as "heat cycling," and it's an important part of break-in that helps to prolong your engine's life.

SAFETY FIRST!

You can't ignore safety when you break an engine in on a stand or on your workbench. You might have to adjust the fuel mixture to keep the engine running, and there's a propeller spinning at very high rpm. Be aware of the path of the prop as it spins, and be very careful. The moment you get too comfortable with a break-in stand is when you get hit by a prop, so be alert, and always use a prop guard.

Break-in with an engine stand or another stationary mount is useful for racers who want to have more control over how their engines run during those critical first few tanks of fuel. It isn't essential, but it's a useful alternative to breaking your engine in on the track, and evidence suggests that it enhances engine break-in. ■

Build a Battery

SOLDER UP A SIX-PACK

Hey, Joe Stick Pack; are you ready to move up to a set of side-by-side cells? Don't risk damaging those expensive new batteries; do the job right by following these steps.

YOU'LL NEED

- Heavy-duty soldering iron (60 watts minimum)
- Battery jig (Deans makes the best)
- "Third hand" tool
- 60/40 rosin-core solder
- Flux paste
- Battery bars

A coat of heat-shrink will protect the cell labels. A heat gun will work best to shrink it, but a hairdryer can do the job.



STEP 1. PREP THE CELLS

If you have matched cells and want to protect their paper labels, slip a sleeve of heat-shrink over each one (we use Trinity's pre-cut stuff, item no. 5075), and shrink it with a hair dryer or a heat gun. Otherwise, all you need to do to prep the cells is scuff the ends with fine sandpaper (220-grit or so).



Scuffing the cells will help the solder to stick.



STEP 2. LOAD THE JIG

Place the cells in the jig, and double-check to make certain that the positive tabs alternate positions as shown.



STEP 3. APPLY FLUX, AND TIN THE CELLS

Put a dab of flux on the end of each cell, and then melt a small pool of solder onto each cell (this coating process is known as "tinning"). The flux helps the solder to spread smoothly. Flip the jig over and repeat.



If your soldering iron can't melt a pool of solder onto the cell in about 5 seconds, you need a hotter iron.



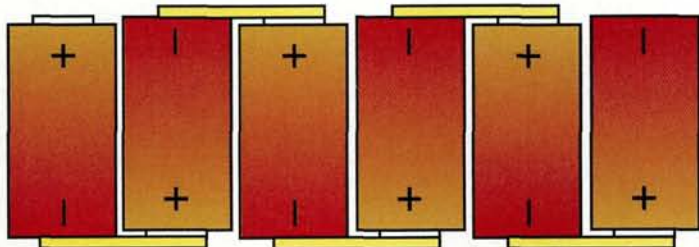
STEP 4. TIN THE BATTERY BARS

Use the third-hand tool to hold the bar while you tin the back of each end. Tin seven bars. The alligator clip and bars will be hot, so watch your fingers.

A thin coat of solder is all you need.

STEP 5. SOLDER THE BARS

Use the jig's pressure arm to press the bar into place, and then use the soldering iron to heat the bar/cell joint. When the solder liquifies and the bar sinks into place, let it cool until the solder solidifies; repeat for the other side of the bar. When you've finished one side of the pack, flip the jig over and repeat the process. Warning! Make sure you alternate the battery bars as shown, or you'll short out the cells.



Here's where the Deans jig really shines.



An "L" tab makes it much easier to attach the power wires.

STEP 6. SOLDER THE END TABS

Bend the remaining two bars into an "L" shape, and then solder them to the "open" ends of the pack. The tabs will make it easier to hard-wire the pack in your car, or solder on the connector of your choice. Before you install the pack in your car, gently flex all the solder joints. If you have any "cold joints," they may pop loose. If any of the bars pop off, re-solder them. ■

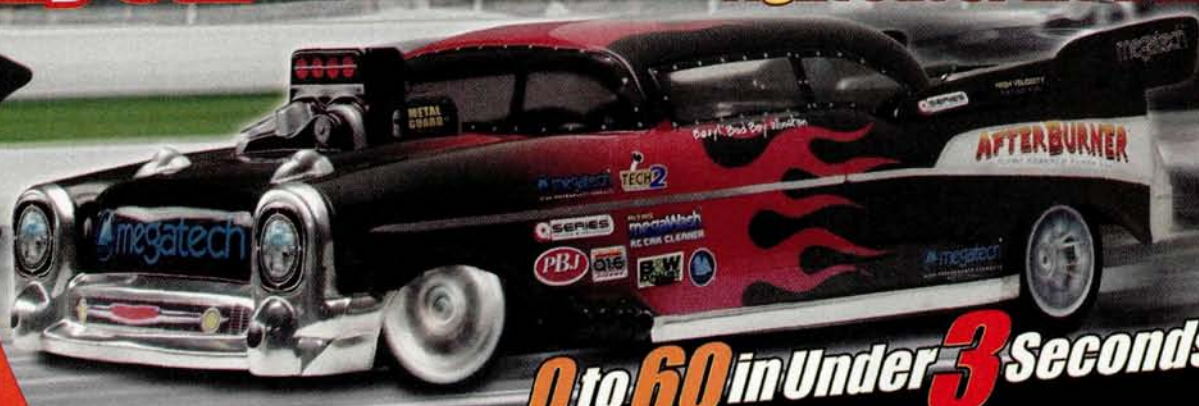
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Glue Tires the Right Way

6 STEPS TO STAY STUCK

You've probably seen it at least once on every race day: some poor guy loses a tire in the middle of his qualifier or Main, much to the delight of the announcer. Oops, somebody forgot to glue their tires! It gets old quick. If you don't want to be that guy (and we know you don't), follow these steps to get glued.

STEP 1. CLEAN THE BONDING AREAS

For the best bond, any mold-release agent left on the tires or wheels must be removed. The best stuff for this job is good ol' alcohol, denatured or isopropyl; other cleaners may leave a residue that could affect the bond. Use a clean paper towel and wipe the tires' beads down until the towel stops picking up residue, and give the rims' mounting channels a swipe, too; a Q-tip is the perfect tool.



See the brown stuff from the tire on the paper towel? It's not gonna help your tires stick!



If you prefer to trim the corners of your tires' inserts, now is the time.

STEP 2. MOUNT THE TIRE

Trim the foam first, if you prefer. Make sure the tire is fully seated before you reach for the glue; if it gives you trouble dry, it will really be a pain when the glue is flowing.

STEP 3. RUBBER-BAND 'EM

Use a rubber band or a tight wrap of tape to squeeze the tires tightly to the rims. We like the fat bands that Team Losi includes with their tire-gluing kit (which also includes our favorite tire glue, Team Losi Bead-Lock).



A fat rubber band is best, but a wrap of tape will work, too.

STEP 4. SPOT-GLUE

Pull back the sidewall of the tire far enough for the glue to reach the bottom of the tire-mounting channel, then place a drop of glue in the channel. Let the tire settle back in and seat the bead; and then repeat this a little farther along the sidewall. Imagine the wheel as the face of a clock, and glue it at 12, 2, 4, 6, 8 and 10 o'clock.



Spot-glue at the dots; the glue will form a continuous bond under the sidewall.

STEP 5. SEAL THE SIDEWALL

Even though you spot-glued in step 4, the thin tire glue will have been drawn along the rim by capillary action to create a continuous bond. The tires won't pull off, but dirt can still pack between the tire and the face of the rim. To prevent this, place a drop of glue on the tire/rim joint, and then tilt the tire so the drop disperses itself around the circumference of the wheel.



Let a drop of glue run around the tire/rim joint to seal it.

STEP 6. LET IT DRY

Set the wheel aside to dry while you move on to the next wheel. Don't immediately flip the wheel over to glue the other side; wet glue may run over the sidewalls. At the very least, your nice neat glue job will be ruined; at worst, the tire may glue itself to your bench. Repeat until both sides of all four tires are glued, and you're ready to race. ■

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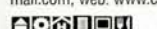


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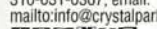
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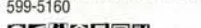
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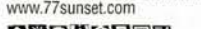
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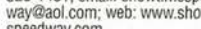
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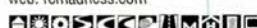


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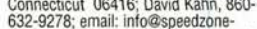
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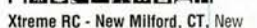
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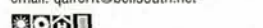
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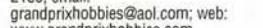
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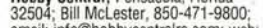
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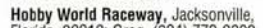
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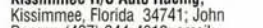
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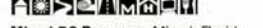
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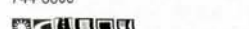
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LOUISIANA

Hobby Town Raceway, Columbus, Georgia 31909; Frank Bastos, (706) 660-1793; email: fbastos@mindspring.com; web: www.hobbytown.com

ARIZONA

Phil Hurd Raceway (S.C.O.R.E.), Savannah, Georgia 31406; Dana Franklin, Club President, 912-308-8545; email: bonescom@bellsouth.net; web: www.score-racing.org

TEXAS

Primetime Raceway, Calhoun, Georgia 30701; Tommy Jackson, 706-825-9037; email: primetimehobby@gccinternet.net; web: primetimehobby@gccinternet.net

FLORIDA

The Flight Box Hobby Shop, Rome, Georgia 30161-6826; Leslie Duke, (706)-234-3014

FLORIDA

HAWAII

A.S.I. Racing, Kapaa Kauai, Hawaii 96746; Arnold Morales, 808-821-8132

FLORIDA

Radio Control Assoc./Alaa Park Raceway, Pearl City, Hawaii 96782; Ace R/C Products, (808) 456-1279

TEXAS

Sandy Flemings, Pearl City, Hawaii 96782; Dave Caldwell, 808-456-7272; email: info@formula1-rc.com; web: www.formula1-rc.com

FLORIDA

IDAHO

Almost Ranch RCs, Twin Falls, Idaho 83301; Casey Clements, (208) 733-8667; email: cclements2@msn.com

FLORIDA

Capital Dirt Burners, Boise, Idaho 83702; Jeff Mills, 208-376-8932; email: jeffmills928@msn.com; web: www.capitaldirtburners.com

FLORIDA

DM Raceway, Pocatello, Idaho 83201; Mike Buffalo, 208-233-8163; email: mike@dmraceway.com; web: www.dmraceway.com

FLORIDA

ILLINOIS

AJs Raceway & Hobby, Dekalb, Illinois 60115; AJ, 815-756-2772; web: www.ajsraceway.com

FLORIDA

C&R Hobbies, Milford, Illinois 60953; Ray Craighead, 815-889-4073; email: thomas@millnet.net

FLORIDA

C.I.R.C.A., Jacksonville, Illinois 62650; Randy John or Sam, (217) 245-1375; web: http://www.geocities.com/jaxcirca/

FLORIDA

His N Hers Hobbies Raceway, Normal, Illinois 61761; Kevin Turek, 309-862-3080; email: hisnherhobbies@aol.com; web: www.hisnherhobbies.com

FLORIDA

HobbyTown USA - Oak Park, IL, Oak Park, Illinois 60301; Mark or Fred, (708) 445-8056; email: htuoipil@aol.com

FLORIDA

Machesney Park Raceway, Machesney Park, Illinois 61115; Gina, (815) 282-1311; email: mpr30@aol.com; web: www.mpr30.homestead.com

FLORIDA

Monee R/C Raceway, Monee, Illinois 60449; Roy or Roberta Moody, (708) 534-2422

FLORIDA

INDIANA

Bremen Racing Ent., Bremen, Indiana 46506; Dale Heuberger, 219-546-3807

FLORIDA

Duneland Hobbies & Raceway, Portage, Indiana 46368; Ron, 219-763-1610; email: RTrobaugh1@email.msn.com; web: www.dunelandhobbies.com

FLORIDA

Hobby Barn Raceway, Terre Haute, Indiana 47802-9694, (812) 299-5773

FLORIDA

Madison Funwheelers Carpet Oval, Madison, Indiana 47250; Charlie Hatchel, 1-812-866-8930

FLORIDA

Pete Russell's R/C Speedway, Elkhart, Indiana 46516; Pete Russell, 574-293-1827

FLORIDA

R/C World of Indiana, Lynn, Indiana 47355; Joe Kolp, (765) 874-2464; email: rcworld@rcworld.com; web: www.rcworld.com

FLORIDA

RC Barn, Monroe, Indiana 46772; Mark Lengerich, (219) 692-6600; email: bigdaddy@adamswells.com; web: www.rcbarn.com

FLORIDA

RCRCR Raceway, Boonville, Indiana 47601; Scott Payton, 812-573-6087; email: email@rcrcr.com; web: www.rcrcr.com

FLORIDA

Schoolyard RC Speedway, Lagrange, Indiana 46761; David W. Bryan, 260-463-3598; email: dwbryan@locnet.net; web: www.rcspeedway.net

FLORIDA

Showtime Lot Racing, Fort Wayne, Indiana 46819; Mike Romines, (219) 478-6099; web: fortwaynecarp.tripod.com

FLORIDA

IOWA

Ames Radio Control Speed Assoc., Ames, Iowa 50014; Ryan Davis/Brad Scandrett, 515-231-3813/515-432; email: Davismotors@aol.com

FLORIDA

Dubuque R/C Speedway, Dubuque, Iowa 52002; Dave Kleinschrodt, 563-556-8524; email: rccraig7@aol.com; web: www.geocities.com/dbqrc

FLORIDA

Hobby Haven, Urbandale, Iowa 50322; Rick Marble, (515) 276-8785; web: www.hobbyhaven.com

FLORIDA

Independence, Independence, Iowa 50644; Eugene Bachman, 319-266-3857; email: BachmanE2@hotmail.com

FLORIDA

Iowa City R/C Racing Association, Iowa City, Iowa 52240; Hobby Corner, (319) 338-1788

FLORIDA

IOAR-Vinton Raceway @ Vinton Roller Rink, Cedar Rapids, Iowa 52402; Ed Karr, 319-362-1291; email: boxkarhobby@aol.com

FLORIDA

Manly R/C Club, Manly, Iowa 50456; Bruce Hill, (641) 454-2025

FLORIDA

Marble's Raceway, Des Moines, Iowa 50317; Rick Marble, (515) 262-7507

FLORIDA

Radio Control Raceway Park, Fort Dodge, Iowa 50501; Bernie Halverson, (515) 576-3780; email: bernieh@frontiernet.net

FLORIDA

RiverFront Speedway, Fort Dodge, Iowa 50501; Bernie Halverson, 515-576-3780 (515-57); email: bhalverson@dodgenet.com

FLORIDA

Wild Bill's Raceway, Knoxville, Iowa 50138; William Anderson, Jr., 641-842-5973; email: wildbilz@iowatelecom.net; web: www.wildbillsracing.com

FLORIDA

KANSAS

D&B Raceway, Menlo, Kansas; Ron Ball, (785) 855-2370

FLORIDA

KENTUCKY

Coyote Raceway, Lexington, Kentucky 40505; Steve M., 859-253-9330; email: coyoterace1@hotmail.com; web: www.coyoteraceway.com

FLORIDA

Dixon's R/C RaceWay, Hazard, Kentucky 41701; Jeff Dixon, (606) 436-4820; email: jeffdr1@hotmail.com

FLORIDA

Mayking R/C Speedway, Mayking, Kentucky 41837; Jon Fields, 606-633-4700; email: jon1@se-tele.com

FLORIDA

Pit Stop Hobbies, Paducah, Kentucky 42003; Robert or Rodney, 270-443-0052; email: pitstop1@apex.net

FLORIDA

R.C. WOW, Falmouth, Kentucky 41040; John P. Jones, (859) 654-1700; email: rcwow@fuse.net; web: www.rcwow.com

FLORIDA

Trio Hobbies & R/C, Radcliff, Kentucky 40160; Maurice Johnson, (502) 351-7547

FLORIDA

Wildcat Speedway, Nicholasville, Kentucky; David Bowles, 859-272-0231

FLORIDA

LOUISIANA

Fast Pace Hobbies, Alexandria, Louisiana 71301; Joseph or Casey Toralba, 318-561-2070; email: fastpacehobbies@aol.com

FLORIDA

Gator R/C Raceway, Moss Bluff, Louisiana 70612; Tony Diaz, 337-855-3206; email: keithsjac@aol.com; web: homepage.mac.com/kmaples/

FLORIDA

Hwy. 44 Hobby Shop, Gonzales, Louisiana 70737; Eric Olmstead, (225) 644-1773; email: eric209@aol.com

FLORIDA

Red Stick R/C Raceway, Baton Rouge, Louisiana 70814; Michael Pino, 225-218-1002; email: redstickraceway@aol.com; web: www.redstickraceway.com

FLORIDA

St. Charles RC Speedway, Destrehan, Louisiana 70047; Al Cazalot, (504)764-0625; email: stcharlesracer@home.com; web: members.home.net/stcharlesracer

FLORIDA

MAINE

Central Maine R/C Speedway & Hobbies, Fairfield, Maine 04963; David Prescott, (207) 453-4588; email: rrcacer@mint.net

FLORIDA

Clay Bowl R/C Hobbies, Greene, Maine 04236; Pat Cap, (207) 946-5003

FLORIDA

MARYLAND

Coles Race Way, Waldorf, Maryland 20602; Cole Brincefield, (301)-843-1386; email: kbrincefield@cs.com

FLORIDA

GPA Hobbies, Crofton, Maryland 21114, 301-858-0004

FLORIDA

HobbyTown USA--Glen Burnie MD, Glen Burnie, Maryland 21061; David Parkison, 410-590-4950; email: racing@mdhobbytown.com; web: mdhobbytown.com

FLORIDA

The Track, Gaithersburg, Maryland 20877; Mimi Wong, (301) 417-9630; email: mimitrthetrack@yahoo.com; web: www.rctrack.com

FLORIDA

Trifecta Hobbies, Prince Frederick, Maryland 20678; George or Mike, 410-414-9000; email: gmitchell@trifectahobbies.com; web: trifectahobbies.com

FLORIDA

MASSACHUSETTS

Big Boys Toys, Fall River, Massachusetts 02723; Track Owner, 508-677-9400

FLORIDA

East Templeton Model Raceway, Templeton, Massachusetts 01468; Keith Anderson, 1-978-632-1619; email: keith@glowplug.com; web: glowplug.com

FLORIDA

Hi-Tech Hobbies, Raynham, Massachusetts; Ruben, (508) 880-5373

FLORIDA

Megadrome Raceway, North Adams, Massachusetts 01247; Bob Blanchette, 413-743-7223

FLORIDA

Northboro Speedway, Northboro, Massachusetts 01532; Bob Trimble, 508-393-8087

FLORIDA

R/C Excitement, Inc., Worcester, Massachusetts 01606; Todd Anderson, 508-853-3272; email: rcexcitement@aol.com; web: www.rcexcitement.com

FLORIDA

RPM RC Raceway, Abington, Massachusetts 02351; Richard Tonetti, 781-857-1177; email: rpmrc@yahoo.com; web: www.rpmrc.com

FLORIDA

MICHIGAN

D.R. R/C, Taylor, Michigan 48180; Bobby or Fred, (734) 287-7405; web: www.downriversracing.com

FLORIDA

Dirt Burner Racing, Commerce, Michigan 48390; Bill, 248-926-1140; web: www.dirtburnerracing.com

FLORIDA

E.U.P., Kincheloe, Michigan 49788; Joel Wiggins, 906-495-3503

FLORIDA

Great Lakes Racers Club, Grand Rapids, Michigan 49588; John Warner, 616-838-2231; email: GrLksRacers@aol.com; web: www.rogers.3.com/glrcl

FLORIDA

Hideaway Raceway, Napoleon, Michigan 49021; David Carlisle, 1-517-536-8821; email: adcarlisle1@netscape.net

FLORIDA

Jons Hobby, Mt. Pleasant, Michigan 48858; Jon Beutler, 989-773-5412; email: jonshobby@earthlink.net; web: www.jonshobby.com

FLORIDA

JT Superspeedway, Battle Creek, Michigan 49015; Jerry or Sam, 616-965-0116

FLORIDA

Larry's Performance RC Carpet Track, Sterling Heights, Michigan 48314; Larry, 586-997-4840; email: cma-herr@hotmail.com; web: larrysperformancers.COM

FLORIDA

Lazer RC Speedway, Adrian, Michigan 49221; Russ Johnson, (517) 263-2806

FLORIDA

N.M.R.C.C. Speedway, Gaylord, Michigan 49735; Gabe, (989) 732-3963; email: hobby-toy@voyager.net

FLORIDA

No Limits RC Raceway-MI, Taylor, Michigan 48180; Paul Yingling, (734) 285-9093; email: fsthobbyshop@yahoo.com; web: fsthobbyshop.com

FLORIDA

R&L Hobbies & Racing, Portage, Michigan 49002; Rex Simpson, (616) 323-3686; web: www.rlhobbies.com

FLORIDA

R.A.C.E. Inc., Jackson, Michigan 49203; Sam Sprang, (517) 787-9161

FLORIDA

Raw Roots Race Tracks, West Olive, Michigan 49460; Roy Bennink, (616)296-0944; email: rawroots@tm.net

FLORIDA

Village Hobbies, Hesperia, Michigan 49421; Al Deater, 231-854-6666; email: vhhobbies@hotmail.com; web: vhhobbies@tdats.net

FLORIDA

Village R/C Raceway, Decatur, Michigan 49045; Chuck Nolke, (616) 423-7878

FLORIDA

MINNESOTA

Country R/C Raceway Park, Belview, Minnesota 56214-8115; Charles L. Steffi, 507- 641-8115

FLORIDA

Jis Radio Control Race Park, Starbuck, Minnesota 56381; Jay Campbell, (230) 239-4827

FLORIDA

Kevin's Off-Road Raceway, Crookston, Minnesota 56716-2317; Kevin Altepeter, 218-281-7491; email: kevin.altepeter@krcrproducts.com; web: www.krcrproducts.com

FLORIDA

National Speedway, Fridely, Minnesota 55432; Steve Hedenland, 763-571-9283; email: mrtip@national-hobby.com; web: www.nationalhobby.com

FLORIDA

Northwoods Hobby Raceway, Brainerd, Minnesota 56401; John or Doug, (218) 829-9257

FLORIDA

Twin Cities Hobby & Raceway, Brooklyn Park, Minnesota 55428; Mark O'Brien/Ray Cook, (763)315-8700; email: wooduster@msn.com; web: www.twincityhobby.com

FLORIDA

MISSOURI

B&L Hobbies & Raceway, Park Hills, Missouri 63061; Bob Marler, (573) 431-9444; web: www.bandhobbies.com

FASTLANE RACEWAY & HOBBIES

Fastlane Raceway & Hobbies, Blue Springs, Missouri 64015; Shane & Randy, (816)220-0100; email: info@fastlanehobby.com; web: www.fastlanehobby.com

HOBBIES IN MOTION RACEWAY

Hobbies In Motion Raceway, Springfield, Missouri 65803; Matthew Froning, 417-886-9621; email: mrkid-turismo@aol.com; web: www.gor-c.com

NORTH MISSOURI RACEWAY

North Missouri Raceway, Chillicothe, Missouri 64601; Billy Johnston, (660) 646-1120

NOVELTY R/C RACEWAY & HOBBIES

Novelty R/C Raceway & Hobbies, Novelty, Missouri 63460; Rex & Jena Franke, 660-739-4530; email: noveltyrc@noveltyrc.com; web: www.noveltyrc.com

RC TRAX RACING CLUB OF CENTRAL MISSOURI

RC TRAX Racing Club of Central Missouri, Hallsville, Missouri 65255; Gary Phillippe, 573-442-8183; email: philip74@verizon.net

REAL BLUE VUE R/C

Real Blue Vue R/C, Kansas City, Missouri 64133; Steve Hale, (816) 358-0238; email: hrealrc@aol.com; web: www.geocities.com/real_rc_raceway

REAL R/C RACEWAY

Real R/C Raceway, Pleasant Hill, Missouri 64080; Steve Hale, (816) 540-5584; email: hrealrc@aol.com; web: www.real-rc.com

SHOWTIME SPEEDWAY

Showtime Speedway, Bakersfield, Missouri; Don Risner, (601) 203-1481

MONTANA

Garden City R/C Speedway, Missoula, Montana 59801; Brian Culp, (406) 549-7992; email: gardencityrc@msn.com

MAGIC CITY RACERS

Magic City Racers, Billings, Montana 59102; Bryan Grummett, 406-656-8266; email: jsaves@tgrsolution.net; web: www.magiccityrc.com

RC OFFROAD ASSOCIATION OF RACING (ROAR)

RC Offroad Association of Racing (ROAR), Libby, Montana 59923; Jamie, 406-293-6506; email: shark-boyet@hotmail.com

NEBRASKA

Hadar R/C Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922

HOBBIY TOWN USA RACEWAY PARK

Hobby Town USA Raceway Park-Nebraska, Lincoln, Nebraska 68508; Chad, 402-434-5062; email: lincolnrcracing@alltel.net; web: www.lincolnrcracing.com

NESCAR Raceway, Grand Island, Nebraska 68801; Steve Blayney, (308) 382-0920; email: blayneyracing@hotmail.com

O.N.R.O.A.D.

O.N.R.O.A.D., Omaha, Nebraska 68104; CoRK Jacobs, (402) 556-8674

OTWG CARPET RACEWAY

OTWG Carpet Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922

THE SALVATION ARMY SPEEDWAY

The Salvation Army Speedway, Omaha, Nebraska 68164, 402-734-3414

1ST PLACE RACEWAY

1st Place Raceway, Fallon, Nevada 89406; Stan Lattin, 775-867-3357; email: info@1stplacetrack.com; web: www.1stPlaceRace.com

LAS VEGAS R/C RACEWAY

Las Vegas R/C Raceway, Las Vegas, Nevada 89139; Patrick Quinn, 702-365-1396; email: patrickquinn98@lvc.com; web: www.lasvegascrraceway.com

T-RIX BIKES & R-C SHOP

T-Rix bikes & R-C shop, Elko, Nevada 89801; Gary Perkins, (775)777-8804; email: mtrnman14k@hotmail.com

HILL TOP R/C

Hill Top R/C, Ashuelot, New Hampshire 03441; Pete Bastoni (owner), 603-239-6111; email: hilltoprc@netzero.net; web: www.hilltoprc.com

LAKES REGION R/C SPEEDWAY

Lakes Region R/C Speedway, Gilford, New Hampshire 03246; Louie Blais, 603-524-2909; email: racing@lakesregionrc.com; web: www.lakesregionrc.com

RT 106 RACEPARK

RT 106 Racepark, Pembroke, New Hampshire 03275; David Daniels, 603-224-7223; email: david@collectracing.com; web: www.106racepark.com

AMERICA'S HOBBY CENTER INC.

America's Hobby Center Inc., North Bergen, New Jersey 07047; John Many, (201) 662-0777; web: www.ahc1931.com

BACK TRACK RACEWAY

Back Track Raceway, Hammonton, New Jersey 08037; Bob W., 609-214-5016

CHECKERBOARD RACEWAYS

Checkerboard Raceways, Elwood, New Jersey 08217; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net

FAMILY HOBBIES RACEWAY

Family Hobbies Raceway, Vineland, New Jersey 08360; Linda Vogel, 856-696-5790; email: familyhobbies@yahoo.com; web: familyhobbiesraceway.com

BROOKLYN HOBBIES

Brooklyn Hobbies, Brooklyn, New York 11234; Richie Siriano, 718-951-2500; email: brooklynhobbies@aol.com; web: www.brooklynhobbies.com

BRUCKNER RACING

Bruckner Racing, Bronx, New York 10465; Thomas Baffers Sr., (800)-288-8185

CHATHAM R/C RACEWAY

Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: crrc@wave-net.net

R.C. R. SPEEDWAY

R.C. R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565

RACE CITY MOTOR SPEEDWAY

Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email: Kellyrcms@cs.com; web: racecitymotorspeedway.com

ROSEWOOD R/C SPEEDWAY

Rosewood R/C Speedway, Goldsboro, North Carolina 27530; Glenn Elam, 919-734-7754; email: glen49@hotmail.com; web: www.glennshobby-corner.com

SANDHILLS RACEWAY

Sandhills Raceway, Southern Pines, North Carolina; Mike Russel, 910-245-4450; email: mrmrc@mindspring.com; web: www.sandhillsraceway.com

Jackson RC Club, Jackson, New Jersey 08527; Al Sardano, 908-770-7621; email: njegeguy@jacksonrcracing.com; web: www.jacksonrcracing.com

JEFFERSON SPEEDWAY

Jefferson Speedway, Oak Ridge, New Jersey 07438; Jim, (973) 697-7525

MILLVILLE R/C OVAL & ROADCOURSE

Millville R/C Oval & Roadcourse, Millville, New Jersey 08332; William Denstoz, 856-327-4640

POTTBELLYS R/C SPEEDWAY

Pottbells R/C Speedway, Pitts Grove, New Jersey 08360; Drew Anastasio, 856-207-2495; email: pottbells@pottbellsrsc.com; web: www.pottbellsrsc.com

SOUTH JERSEY COST CONTROLLED RACING

South Jersey Cost Controlled Racing, Sicklerville, New Jersey 08061; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net; web: www.sjccr.com

SPEEDPRO DRAGWAY

SpeedPro Dragway, Elizabeth, New Jersey 07206; Albie Niziolek, 908-351-5080; email: funnycar176@aol.com; web: www.speedpro.org

TRAX 70 SPEEDWAY

Trax 70 Speedway, Browns Mills, New Jersey 08015; Patrick O'Bassey, 609-735-0707; email: patrick@obassey.com; web: www.Trax70.com

WACKY RC RACEWAY

Wacky RC Raceway, Roselle, New Jersey 07203; Tony Williams or Kimble Wright, (908) 241-6700

NEW MEXICO

Albuquerque R/C Off-Road Raceway, Albuquerque, New Mexico 87120; Bill Mitchell, (505) 250-3411(m); email: info@rcDirtTrack.com; web: www.rcDirtTrack.com

SPEED ZONE

Speed Zone, Clovis, New Mexico 88101; Brad Ferguson, 505-769-1737; email: speedzone@yucca.net

NEW YORK

(CR R/C Racers) Capital District Radio Controlled Stock Car Club, Nassau, New York 12123; Kirt Coonrad, 518-766-0029; email: cdrcrcc@hotmail.com; web: cdrcracers.50megs.com

BARNSTORMERS RC RACEWAYS

BarnStormers RC Raceways, Chester, New York 10918; Lou Sytsma, 845-469-BARN(2276) o; email: iamssytsma@hotmail.com; web: www.barnstormersrc.com

BRENNAN'S RC HOBBIES

Brennan's RC Hobbies, Vernon, New York; Bill or Tom Brennan, (315) 829-4930

BROOKLYN HOBBIES

Brooklyn Hobbies, Brooklyn, New York 11234; Richie Siriano, 718-951-2500; email: brooklynhobbies@aol.com; web: www.brooklynhobbies.com

BRUCKNER RACING

Bruckner Racing, Bronx, New York 10465; Thomas Baffers Sr., (800)-288-8185

CHATHAM R/C RACEWAY

Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: crrc@wave-net.net

R.C. R. SPEEDWAY

R.C. R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565

RACE CITY MOTOR SPEEDWAY

Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email: Kellyrcms@cs.com; web: racecitymotorspeedway.com

ROSEWOOD R/C SPEEDWAY

Rosewood R/C Speedway, Goldsboro, North Carolina 27530; Glenn Elam, 919-734-7754; email: glen49@hotmail.com; web: www.glennshobby-corner.com

SANDHILLS RACEWAY

Sandhills Raceway, Southern Pines, North Carolina; Mike Russel, 910-245-4450; email: mrmrc@mindspring.com; web: www.sandhillsraceway.com

Hobby Zone Raceway, Ozone Park, New York 11417; Brian, Sean or Adam, (718)641-9001; email: moon-chaserwolf@aol.com

LIL WHEELS RACEWAY

Lil Wheels Raceway, Oswego, New York 13126; Bill Meyer, 343-6566; email: lilwheelsraceway@hotmail.com; web: lilwheelsraceway.tsx.org

LONG ISLAND RACEWAY

Long Island Raceway, Farmingdale, New York 11735; James, (516) 845-7223; web: www.raceway.com

MAYHEM RC RACEWAY

Mayhem RC Raceway, Wolcott, New York 14590; Wade Rowley, 315-594-2609; email: race@mmhobby.com; web: www.mmhobby.com

PRO SPEEDWAY

PRO Speedway, Cattaraugus, New York 14719; Marc Pritchard, (716) 257-3101

RACING CITY HOBBIES & R/C RACEWAY

Racing City Hobbies & R/C Raceway, South Glens Falls, New York 12803; Ken Taylor, 518-792-7272; email: racingcity@verizon.net; web: www.racingcity.com

RADIO HILL RACEWAY

Radio Hill Raceway, Dundee, New York 14837; Bill or Greg, 607-243-8641 (Bill);

RAMPAGE R/C & HOBBIES

Rampage R/C & Hobbies, Hyde Park, New York 12538; Brian Walker, (845) 229-1379

SOUTH SHORE HOBBY & RACEWAY

South Shore Hobby & Raceway, Coram, New York 11727; Benny or Bonnie, 631-696-8500; email: ssh@southshorehobby.com; web: www.southshorehobby.com

SOUTHERN TIER RACEWAY

Southern Tier Raceway, Owego, New York 13827; Anita Harding, (607) 687-5395

TARMAC ULTIMATE R/C RACEWAYS

Tarmac Ultimate R/C Raceways, Poughkeepsie, New York 12603; Todd Plass, 845-342-5409(Todd); email: toddp@tarmacraceway.com; web: www.tarmacraceway.com

WALTIS HOBBY

Waltis Hobby, Syracuse, New York 13209; Bruce, 315-453-2291; web: www.waltis-hobby.com

WILLIS HOBBIES R/C SPEEDWAY

Willis Hobbies R/C Speedway, Mineola, New York 11501; Ken Ford, 516-746-3944; web: www.willishobbies.com

NORTH CAROLINA

Antique Barn & Hobby Shop, Wilson, North Carolina 27893; Steve, (252) 237-6778; email: antiquebarn@earthlink.net; web: www.theantiquebarn.net

CHATHAM R/C RACEWAY

Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: crrc@wave-net.net

R.C. R. SPEEDWAY

R.C. R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565

RACE CITY MOTOR SPEEDWAY

Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email: Kellyrcms@cs.com; web: racecitymotorspeedway.com

ROSEWOOD R/C SPEEDWAY

Rosewood R/C Speedway, Goldsboro, North Carolina 27530; Glenn Elam, 919-734-7754; email: glen49@hotmail.com; web: www.glennshobby-corner.com

SANDHILLS RACEWAY

Sandhills Raceway, Southern Pines, North Carolina; Mike Russel, 910-245-4450; email: mrmrc@mindspring.com; web: www.sandhillsraceway.com

SOUTHERN R/C MOTORSPORTS CLUB

Southern R/C Motorsports Club, Shalotte, North Carolina 28459; Chris Dixon, (910) 754-6315; email: chaservolf@aol.com

XTREME DIRT R/C RACEWAY & XTREME ON-ROAD RACEWAY

Xtreme Dirt R/C Raceway & Xtreme On-Rd Raceway, Kannapolis, North Carolina 28083; Chris Lyerly-Xtreme Hobbies, Inc., 704-933-5321; email: thehobbyshop02@aol.com

OHIO

AK Hobby & Raceway, Cincinnati, Ohio 45211; Tim Tolle, (513) 661-7080; email: tim@akhobby.com; web: www.akhobby.com

AMERICAN OHIO SPRINT CAR ASSOCIATION

American Ohio Sprint Car Association, Wickliffe, Ohio 44092; Gary Waldhelm, 440-944-9966; web: www.aosca.8m.com

BLACK SWAMP R/C CAR CLUB

Black Swamp R/C Car Club, Toledo, Ohio 43623; Riders Hobbies, 419-843-2931; email: ridersclub@webtv.net; web: www.blackswampcjb.net

D&D R/C RACEWAY

D&D R/C Raceway, Orrville, Ohio 44667; Don, (330) 682-4266

DEFOSSE RACEWAY

DeFosse Raceway, Ripley, Ohio; Greg DeFosse, (937) 377-2063

HOBBIYLAND RACEWAY

Hobbyland Raceway, Proctorville, Ohio 45669; Craig Harber, 740-886-0502or 740-8; email: pitoverracing@webtv.net; web: hobbylandraceway.homestead.com

MID OHIO DIRT OVAL

Mid Ohio Dirt Oval, Lexington, Ohio 44504; D&D Hobby Center, (419) 884-0001

NOTHING BUT AIR R.C. TRACK

Nothing But Air R.C. Track, Logan, Ohio 43138; Gary Lloyd, 740-385-0288

OHIO VALLEY OFFROAD R/C RACEWAY

Ohio Valley OffRoad R/C Raceway, Jerusalem, Ohio 43747; Kevin Wilson, (740) 926-1738; email: consol@1st.net; web: www.ovor.8m.com

OUTLAW SPEEDWAY

Outlaw Speedway, Lexington, Ohio; Eric Radio, 419-884-0001; email: kramerjrc@aol.com; web: rcdirtoval.freewebservers.com

R/C HOBBY

R/C Hobby, Medina, Ohio 44256; Chris Kohout, 330-723-0255; email: kohouty@aol.com

RECAWAY 42

ReCaway 42, Mansfield, Ohio 44905; Chris Cates, 419-589-4173; email: mopar340v8@aol.com; web: www.ReCaway42.itgo.com

RIVER RAT RACING

River Rat Racing, Ripley, Ohio 45167; Jon Faris, 937-392-9298; email: honey3@bright.net; web: www.riverraceraceway (under construction)

T.S.R.C.A.R.

T.S.R.C.A.R., Hamilton, Ohio 45011; Dennis Young, (513) 367-5634; email: scalerac@aol.com; web: www.tristaterecatoracers.com

TARCAR

TARCAR, Toledo, Ohio 43617; Bill Bridges, (419) 826-3859

ULTRA RACING R/C HOBBY AND TRACK

Ultra Racing R/C Hobby and Track, Hamilton, Ohio 45015; Ed Lewis, 513-863-7342; email: UltraRacing@aol.com; web: UltraRacing.com

Y-City Hobby & Speedway, Zanesville, Ohio 43701; Kevin McKenna, (740) 455-3025; email: kevin@y-cityhobby.com; web: www.ycityhobby.com



OKLAHOMA

Action Hobbies, Tulsa, Oklahoma 74145; David Cole, (918) 663-8998; email: acthobby@aol.com



Action RC Speedway, Oklahoma City, Oklahoma 73135; Jerry Hawthorne, (405) 670-7770; email: ginna-hawthorne@cox.net; web: www.action-rc.com



Adams Creek R/C Speedway, Broken Arrow, Oklahoma 74014; John Beighle, (918) 355-1416



Competition R/C, Oklahoma City, Oklahoma 73149; James or Louise Brown, (405) 634-0809; email: com-prc1@aol.com



Enid R/C Speedway, Enid, Oklahoma 73703; Darin Pendleton, (580) 554-9400; email: darin@enid.com; web: www.enidrcracing.com



HobbyTown USA-Norman OK, Norman, Oklahoma 73072; Todd Jensen, (405) 292-5850



Wings N Things Raceway, Tulsa, Oklahoma 74105; Heath Anderson, (918) 745-0007



OREGON

R/C Plus Hobbies Raceway, Salem, Oregon 97302; Ron Smith, (503) 364-9188; email: rcplus@rcplus.com; web: www.rcplus.com



Rose City Scale Racing, Portland, Oregon 97201; Dominic, (503) 484-8887; email: dominic@rc-cars.com; web: www.rc-cars.com



PENNSYLVANIA

Altoona RC Raceway, Altoona, Pennsylvania 16602; Chuck or Doug Meyers, (814) 944-1200; email: altoonarc@yahood.com; web: www.altoonarcway.com



Bumps & Jumps RC Speedway, Elfers, Pennsylvania 17319; Chris McKinney, 717-932-3000; email: bumpsandjumps@comcast.net; web: http://www.bumpsandjumps.com



DC Ultra Trax, Warmminster, Pennsylvania 18974; David Cowan, (215) 672-5200; web: www.jrcr-hobbies.com



Dirtburners Club sponsored by Schmidts Hobby, Windber, Pennsylvania 15963; Bruce Schmidt, (814) 266-4118; email: rcman@floodcity.net; web: www.rcman.net



Dreamboat Hobbies, Warren, Pennsylvania 16365; Louie Dussia, (814) 723-8052; email: dreamboat77@yahoo.com; web: www.dreamboathobbies.com



J&K Hobbies and Raceway, Jersey Shore, Pennsylvania 17740; Shawn Winter, 570-398-8171; email: rcmaniac1@msn.com; web: www.JandKHobbies.com



Kranzels R/C Raceway & Hobbies, Lemoyne, Pennsylvania 17043; David or Stuart Kranzel, (717) 737-7223; web: www.kranzelsrchoobbies.com



Little Plum R/C Hobbies, Lock Haven, Pennsylvania 17745; Larry Duck, (570) 769-1984



Marshallis R/C Raceway, Honesdale, Pennsylvania 18431; Bill or Dot Marshall, (570) 729-7458



McCulloughs Offroad, Sarver, Pennsylvania 16055; Doug McCullough, (724) 352-0116; email: dmccul323@aol.com; web: www.mcculloughsoffroad.com



Newville RC Speedway & Hobbies, Newville, Pennsylvania 17241; Randy or Mike, 717-776-5568; email: newvillercspeedway@yahoo.com; web: www.newvillercspeedway.com



Pit Stop Hobbies-Mount Joy, PA, Mount Joy, Pennsylvania 17552, (717) 653-6222; email: pitstophobbies@pit-stop-hobbies.net; web: www.pitstophobbies.net



Racers Edge R/C Racing & Hobbies, Smethport, Pennsylvania 16749; Rick Morgan or Johna Simar, (814) 887-9256; email: postmaster@racer-edgerserc.com; web: www.racer-edgerserc.com



RB Motorsports & Hobby, Northumberland, Pennsylvania 17857; Rick Bunting, (570) 473-8711



RC Avenue Raceway, Bradenville, Pennsylvania 15650; Dan Vensel, 724-396-7628; email: mrmud@kiski.net



RC Outfitters, Hanover, Pennsylvania 17331; Chris Shaffer, (717) 633-9490; email: thestore@rchoobbies.com; web: www.rchoobbies.com



Riverside Raceway, Warren, Pennsylvania 16365; Jeff, (814) 723-4211



Staub Bros. R/C Speedway, Gettysburg, Pennsylvania 17325; Todd or Scott Staub, 717-334-8488; web: www.staubbrothers.com



The Raceway at River Junction, Beaver, Pennsylvania 15009; Sam or John, (724) 728-5571; email: riverjct@stargate.net



Thunder Road Raceway, Limerick, Pennsylvania 19468; Barry or John, 610.831.8898; email: xslotgdx@aol.com; web: www.tow-barr.com



Trains & Lanes Raceway, Easton, Pennsylvania 18045; Jeff Setzer, (610) 253-8650 or (8) email: trainslanes@aol.com



TRP, Kingston, Pennsylvania 18704; Rob Yeager, 570-283-3066; email: rrcob99@aol.com



Washington RC Raceway, Washington, Pennsylvania 15301; Aaron Stimmell Jr., 724-228-8396



WillCam Raceway, Punxsutawney, Pennsylvania 15767; James Campbell, (814) 939-4251



PUERTO RICO

Bayamon R/C Park, Bayamon, Puerto Rico 00956; Damian Cruz & Javier Rivera, (787) 869-8092 & 401; email: damian@bayamonrcpark.com; web: www.bayamonrcpark.com



Hi-Speed C Raceways, San Juan, Puerto Rico 00926; Carlos Ortiz, (787) 283-0198; email: hispeed@hotmail.com; web: www.hispeedhobby.com



Mech Tech Touring Park, Caguas, Puerto Rico 00725; Humbert (Tito) Lizardi, (787) 739-1572; email: tlizardi@hotmail.com



Tropical Raceway Track, Manati, Puerto Rico 00674; Hector Pabon/George Pabon, 787-785-9529; email: trophob@coqui.net; web: www.tropicalhobby.com



RHODE ISLAND

Insane Track, Cranston, Rhode Island 02907; Jose Jimenez, 401-467-8878; email: chevygo8@aol.com; web: www.insanehobbies.homestead.com



SK Hobbies Inc., Johnston, Rhode Island 02919; Slim or Keith, (401) 453-1440



SOUTH CAROLINA

Atomic Racers, Aiken, South Carolina 29803; John Felak, 803-642-0314; web: http://AtomicRacers.tripod.com



Carolina R/C Speedway, Easley, South Carolina 29640; David, 864-295-1209; email: cprahlrc@imindspring.com; web: www.carolinarc.com



Darlington R/C Raceway at Hobbies & More, Darlington, South Carolina 29532; Jerry Pollard, (843) 393-0355; web: www.hobbiesnmore.com



DirtSlingeris, Hartsville, South Carolina 29550; Don Dietz, 843-383-0017; email: dsdobbies@aol.com; web: www.dands-speedway.50megs.com



The Grove Racing Center, Rockhill, South Carolina 29730; Don Faris, (803) 327-4121; web: www.hobbyystop.com



SOUTH DAKOTA

Dakota Off-Road Racers, Aberdeen, South Dakota 57401; Kevin, 605-225-5223



Grassland Racers, Black Hawk, South Dakota 57718; Ryan Logan, (605) 787-5632



Triple B, Winner, South Dakota 57580; Broc Stout, (605) 842-2699



TENNESSEE

Hobby Town USA, Franklin, Tennessee 37067; Bobby Mills, (615) 771-7441; email: htut126@aol.com



Mid-South Racing Association, Memphis, Tennessee 38133; Michael Feliciano, 901-268-7969; email: michael.feliciano@expeditors.com; web: www.msra-racing.com



MSA R/C Racing, Crossville, Tennessee 38555; D.R. Findley, (931) 456-0027



Need For Speed Raceway R/C, Chattanooga, Tennessee 37415; Ronnie Cox, (423) 876-9019



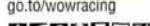
Robertson's R/C Raceway, Jackson, Tennessee 38301; Travis Robertson, 731-423-6984; email: RobertsonsRC@aol.com



SpeedZone Raceway Park, Athens, Tennessee 37303; Mike Henderson, 423-744-8358; email: speedzone@msn.com; web: www.speedzoneraceway.com



W.O.W. Raceway, Beech Bluff, Tennessee 38313; Brad Jones, 731-427-1625; email: wowracer@charter.net; web: go.to/wowracing



TEXAS

215 Speedway, Abilene, Texas 79602; Clyde Gardner, (915) 673-2351



Alis Hobbies, San Antonio, Texas 78227; Alfonso Robles, 210-645-1050; email: alishobbies@usa.com; web: www.alishobbiesusa.com



Austex RC, Austin, Texas 78757; Michael, 512-458-2324; web: www.austexrc.com



B&B R/C Hobbies, Big Spring, Texas 79720; Walter Bumbulis, (915) 263-1790; email: b&brchobbies@apex2000.net



Big Mike's R/C Raceway, Longview, Texas 75604; Mike Sumrow, 903-297-7814



Drycreek Raceway, Greenville, Texas 75402; Micky Alphin, 903-527-5381; email: drycreek@pulse.net; web: web.pulse.net/drycreek



Finishline Raceway, Hurst, Texas 76053; Damon Darnall, (972) 404-0463; email: Finishline@ev1.net; web: http://users.ev1.net/~finishline/index.htm



Hal's Hobby Raceway, El Paso, Texas 79936, (915) 591-2213; web: www.halshobbywarehouse.com



Hobby Center Race Track, Houston, Texas 77598; Issac Ben-Ezra, 281-488-8697; email: Hobbycenter@issac-smodels.com; web: www.hobbycenter.cc



Hobbytown USA-San Antonio TX, San Antonio, Texas 78209; Clark, (210) 829-8697; fax



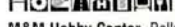
Indy R/C World, Garland, Texas 75041; Steve Webster, (972) 271-4844; fax; web: www.indyrworld.net



Js Action R/C, Pasadena, Texas 77504; Jack Williams, 713-946-8888; email: jayactionrc.net; web: www.jsactionrc.com



K&M Racing, New Caney, Texas 77357; Brent Mahaffy, (281) 399-9777



M&M Hobby Center, Bellaire, Texas 77401; Meir Ben-Ezra, 713-661-7137; email: mandm@mmhobby.com; web: www.mmhobby.com



MBRC, Dallas, Texas 75093; Mike Battle, email: info@mbrc-racing.com; web: www.mbrc-racing.com



Mike's Hobby Shop Superstore & Raceway, Carrollton, Texas 75006, 972-242-4930; email: mike@mikes-hobbyshop.com; web: www.mikes-hobbyshop.com



Reflex R/C, Houston, Texas 77055; Joseph Chen, (713) 464-4458; web: www.reflexrc.com



T&M Raceway R/C Drag Racing, Addison, Texas 75244; Marvin Jackson, (972) 416-0445; email: mackson@tmraceway.com; web: www.tmraceway.com



T&T R/C Cars, Plano, Texas 75024; Joe Sullivan, (972) 633-2470



The Rollcage, Greenville, Texas 75402; Guy Allen, (903) 883-0332; email: rollcage2000@therollcage.com; web: www.therollcage.com



Thompsons RC Raceway, Lufkin, Texas 75901; Mark Thompson, (936) 637-7093



W.E.S. Hobby Race, Beaumont, Texas 77701; Marty Walker, (409) 839-4929



X-Treme Hobbies, Round Rock, Texas 78664; Jef Santos, (512) 310-0444



UTAH

Hobbie Stop Raceway, Riverdale, Utah; Todd Hamilton or Beazer Martin, (801) 622-0841



Intermountain R/C Raceway, Magna, Utah 84044; David Mott, 801-250-8303; email: rcmotor1@aol.com; web: www.IRCRaceway.com



Outback Raceway, Ogden, Utah 84404; Steve Brown or Beazer Martin, 801-726-3458; email: Steve@rmrccr.com or Beazer@bibbs.com; web: www.mrmccr.com or www.beazershobbies.com



Vision Hobby, Orem, Utah 84057; Ken Rice, (801) 226-6226



VERMONT

Empire Hobbies Off-Road Raceway, Saint Albans, Vermont 05478; Scott or Jen, 877-446-2243; email: empirehobbies@adelphia.net; web: www.empirehobbies.com



R/C Toy Box Hobbies & Tracks LLC, Saint Johnsbury, Vermont 05819; Raymond Richard, 802-748-1030; email: ray@rctoybox.com; web: www.rctoybox.com



VIRGINIA

Brad's Hobbies, Staunton, Virginia 24401; Brad, (540) 885-3642; email: brad@bradshobbies.com; web: www.bradshobbies.com



Brown Brothers Hobbies, Dumfries, Virginia 22026; Joe or Bob Brown, 703-221-5746; email: joe@bbhobbies.com; web: www.bbhobbies.com



Cooper's Radio Control Race Center Inc., Chatham, Virginia 24531; Norris L. Cooper, 434-724-4182; email: nlcooper@earthlink.net; web: www.coopersrc.com



Debbies RC World, Chesapeake, Virginia 23320; Les Modlin, 757-361.6681; email: Eric@debbiesrc-world.com; web: www.debbiesrcworld.com



Hampton Roads R/C Drag Club, Virginia Beach, Virginia 23452; Garry Nelson, 757-399-8645; email: Garry@gsdragracing.com; web: www.HRRDC.com



KC's Radio Control & Repair, Lynchburg, Virginia 24503; Curtis or Kim Wright, (804) 384-8596



Linville Hobbies Raceway, Linville, Virginia 22634; Jason or Jerry Shenk, (540) 833-2222; email: linvillehobbies@juno.com; web: www.linvillehobbies.com



Olde Towne Hobby Shoppe, Manassas, Virginia 20110; Jeff Gough, (703) 369-1197; web: www.ManassasHobby.com



Roanoke R/C Club, Salem, Virginia 24153; Chad Trent, 540-765-8092; email: chad@dooleypublishing.com; web: roanokerc.cjb.net



Shamrock Raceway, Winchester, Virginia 22601; Charlie Greathouse, 540-678-8878; web: www.svpowersliders.org



Stream Hobby Shop, Newport News, Virginia 23605; Rusty Kennedy, 757-591-0720; email: stream.hobbyshop@verizon.net; web: streamhobbyshop.com



The Tiltyard, Dayton, Virginia 22821; Homer, 540-828-3476; email: homer@tiltyard.com; web: www.tilt-yard.com



Thunder Road RC Speedway, Gordonsville, Virginia 22942; Ernie Padgett, Owner, 540-832-3318 (track); email: Thunder_Road_RC@hotmail.com; web: www.thunderoadrc.com



Tidewater R/C Speedway, Inc., Hampton, Virginia 23663; Jim Pike, Rob Marsette, Dave Pritchard, (757) 723-8927; email: zeeaya31@hotmail.com



WASHINGTON

A-Main Raceway, Vancouver, Washington 98685; Monty Coleman, (360) 571-8404; web: www.amainraceway.com



Atomic Hobby, Issaquah, Washington 98027; Stanley Ng, (253) 391-8890; email: atomichobby@msn.com; web: atomichobby.com



Burien Toyota R/C, Seattle, Washington 98148; Ray Meek, (800) 654-6456



Cedardale Raceway, Mount Vernon, Washington 98273; Craig, 360-755-9464



Fantasy World Raceway, Tacoma, Washington 98408; Dave Kleinman, (253) 473-6223; email: sales@fantasy-worldhobbies.com; web: www.fantasy-worldhobbies.com



Four Season R/C Racing, Olympia, Washington 98506; Gary and Sharon Brown, (360) 491-2430



Hank Perry Raceway, Spokane, Washington 99023; Hal Hudson, 509-879-3503; email: halshudson@msn.com



HobbyTown USA--Lynnwood WA, Lynnwood, Washington 98037; Rich or Jamie, 425-774-0819; email: rhob-bytown@aol.com



HobbyTown USA--Tacoma WA, Tacoma, Washington 98408; HobbyTown USA Shop, (253) 474-7787



Paradise Raceway and Hobbies, Spokane, Washington 99207; Mark, 509-483-1843; email: paradiserc@hotmail.com; web: www.websters.com/paradise



Race City, Auburn, Washington 98002; Bruce, (253) 939-2515; email: auburn@pacifier.com



Rain City RC Raceway, Lynnwood, Washington 98036; Pete or Debbie Cartwright, 425-776-8241; email: info@raincityraceway.com; web: www.raincityraceway.com



Schmidt's Auto Parts, Marysville, Washington 98271; Jon Failla, (360) 653-8838; email: schmidtsc@aol.com; web: www.schmidtscraceway.com



Spokane Indoor Raceway, Spokane, Washington 99212; Brian Batch, 509-487-2122



Tacoma R/C Raceway, Tacoma, Washington 98409; Scott Brown, (253) 565-1935; web: www.tacomarcaceway.com



West Coast Hobby & Raceway, Richland, Washington 99352; Darren Shank, (509) 375-4995



WEST VIRGINIA

Burr Fab R.C. Raceway, West Union, West Virginia 26456; Mark Travis, 304-873-2487; email: burrhouse1@cs.com



Fulton's R/C Raceway, Wheeling, West Virginia 26003; James Fulton, (304) 233-5355



Mountwood Raceway, Vienna, West Virginia 26105; Tom Allen, 304-295-3234; email: ray@ovrrcc.com; web: www.ovrrcc.com



Quiet Dell Raceway, Fairmont, West Virginia 26554; Darris, (304) 366-1441; email: Tateracing@aol.com

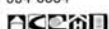


WISCONSIN

ABC R/C Inc & Raceway, Waukesha, Wisconsin 53186; Dick Mathiesen, 262-542-1245; email: Help@abcrchobby.com; web: www.abcrchobby.com



Gary's Hobby Center, Racine, Wisconsin 53403; Bill Phalen, 262-554-8884



Hobbytown Oshkosh-The New Revolution Raceway, Oshkosh, Wisconsin 54901; Bill Magritz-Race Director, 920-426-1840; email: hobby807@sbccglobal.net; web: www.hobbytownoshkosh.com



KDM Hobby & Raceway, Abbotsford, Wisconsin 54405; Kevin Michlig, 715-223-4414; email: kdmhobby@charter.net; web: kdmhobby.homestead.com/kdmhobby.html



MARCCA Raceways, Poynette, Wisconsin 53955; Don Hartley, 608-243-1778; email: hotrodhartley@aol.com; web: www.marcca.com



Mid-West Tri-Clone, West Bend, Wisconsin 53095; Dave Jansen, 262-338-3809; email: djansen@charter.net; web: www.triclone.net



Oshkosh RC, Oshkosh, Wisconsin 54902; Bob, 920-426-1840; email: hobby807@sbccglobal.net; web: www.hobbytownoshkosh.com



Pro-Star Racing, Green Bay, Wisconsin 54301; Chuck or Randy, Chuck-920-494-1233/R; web: www.prostarracing.com



S&N's Tracksides Hobbies and Raceway, Milwaukee, Wisconsin 53005; Scott Ernst, 262-783-4699; email: sernst@trackside.com; web: www.trackside.com



The Shorthalf Raceway, Eau Claire, Wisconsin 54701; Scott Schoettle, 715-838-8350; email: Scottschoettle@mcleodusa.net



WYOMING

Xtreme Hobbies & Raceway, Gillette, Wyoming 82718; Krieg Balls, 307-682-6077; email: xtremraceway@collinscom.net



ARGENTINA

Circito R/C Lobos, Lobos 7240; Rupert Bruce, 54-02222-422905; email: rclobos@yahoo.com; web: www.rclobos.8m.com



Circuit M.R. Models, Buenos Aires 1428; Maximiliano Roballos, 54 11 4557 1000, fax: email: info@kyosho-argentina.com.ar; web: www.kyosho-argentina.com.ar



Club A. Velez Sarfield, Buenos Aires; Jorge Herrero, 54-01-658-5851



AUSTRALIA

A.C.T. Model Car Racing Club, Wanniasa; Gary Davey, 61-6-2871411



A.C.T. Remote Control Car Club, Kambah; Rob Jorgensen, 61-2-6231-9925; email: bjorg@industry.gov.au; web: www.actrcc.com



Aubry R/C Car Club, Aubry 2640; Ron Langman, 060-247-128



Brisbane Dirt Racing, Brisbane 4053; Jeff Chandler, 07 3355 7476, 041 8; email: bigfix@bigpond.net.au; web: www.users.bigpond.net.au/bigfix



Canberra Off Road Model Car Club, Queanbeyan 2902; Graham Brown, 02 6241 3070; email: gbrown@webone.com.au; web: www.webone.com.au/~gbrown/mrccc/index.html



Canberra Off-Road Model Car Club, Narrabundah 2604; Graham Brown, 61-6-241-3070



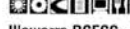
Carine R/C Model Car Club, Inc., Greenwood; Mitchell Davies, 0418 955 931; email: t3daves@iinet.net.au



Castle Hill Radio Control Off Road Car Club, Castle Hill 2754; Peter Ellis, 0412 257 353; email: chrcrcc@next-century.com.au; web: www2.nextcentury.com.au/chrcrcc



Central Coast ORRC, Bateau Bay 2261; Peter J. Knight, 61-43-693-698



Illawarra RCECC, Albion Park Rail 2527; Mel or Andrew, 042-714-683



Lakeside R/C Racing Car Club, Lansvale 2166; R. Bartolozzi, 62-2-907-9800



Melton Electric Circuit Car Association, Melton 3337; Arthur Joslin, 61-3-9747-8805



NSW Indoor R/C Raceway, Hurstville 2220; Anthony Lee or Walter Ly, 02-9585-8810



Penfield Park, Adelaide 5108; Trevor U'New South Wales, (618) 8289-5010



R.C. Speedway, Newcastle 2300; Andrew Dillon-Smith, 02-49265966



TFTIR - Templestowe Flat Track Racers, Templestowe 3106; Nigel George, see website; email: tftir@imagefile.net; web: drive.to/tftir



The Bayside Raceway, Brisbane 4178; Nigel Bell, 07 3893 9893; email: mwr1@dingoblu.net.au



Victorian Radio Control Drag Racing Association, Melbourne 3940; John de Tracy, +61 03 59867509; email: bjrn01@hotmail.com; web: www.ozemail.com.au/~john59/index.html



Wee Waais Offroad RC, Burren Junction 2386; Shane, 61-02-6796-1339



Wodonga R/C Car Club, Wodonga 3690; Paul Townsend, 02-6056-0706; email: townsend175@ozemail.com.au



AUSTRIA

RMC-Wien, Vienna A-1220; Herbert Holze/Martin Hrzak, +43-664-4730376



BARBADOS, WEST INDIES

R.O.A.R. (Radio Operated Auto Racing), St. Michael; Marva Clarke, (246) 427-3907



BELGIUM

ATR-Alka-Tele-Racing, Limburg; Alken, 0032-11-25-49-03



MBV-Kampenhout, Kampenhout B1910; Frank Mostrey, 0-16-65-75-18



Model Racing Club Oudenaarde (MRCCO), 9700 Oudenaarde; Nicky Delmote, and fax: 32 55 30 36; email: mrccracing@hotmail.com; web: mrccracing.tripod.com



MRCZ, De Burg; Montie, 75-71-63



R.C.A.R., Retie 2470; A. Eelen, 32-14-379685



BRAZIL

AGARC Associação, o Goiano de Automodelismo Radiocontrolado, Aparecida de Goiânia 74980-070; Zeca, Carol, Warner or Rodrigo, 062 9979 9009; email: zeca.net@terra.com.br



Amoc Cassociação de Modelismo B. Cambario, Bal. Cambario 88.330-000; Leo Cesar, (047) 366-0001



Brasília R/C Motor Circuit, Brasília 70000; Alexandre (Alex), 55-061-273-7205



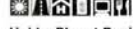
C.A.A.R. Curitiba Associação de Automodelismo Radiocontrolado, Curitiba 82650-530; Ronaldo Assumpcao, 55-41-354-2804



Electric Car Club R/C Santos, Santos 11065-001; Estevam or Arnaldo, 55-013-232-2536



Hobby Center, Brasília 70.273, 061-242-0488



Hobby Planet Racing Club, Campinas 13091901; Daniel, Helio, Luciano, 019 258 2768



Jungle Drive, Rio de Janeiro 21940-490; Paulo Brito, (021) 396-0851 or (0 20)



Off Roaders, Sao Paulo 05640; Waldir Ielpo, (055) 011-260-5628;



CANADA

C.A.R.C.A.R., Calgary; Kerry Nevatte, 403-630-8852; web: www.carcar.ca



Cactus Speedway, Kingsville N9Y 2V6; Bob Tanner, 519-326-3176; email: khunter@sparracers.com; web: www.sparracers.com



Cam R/C, Coquitlam V3E 1K9; Roger Brown, 604-945-3888



Circuit J.C., St. Polycarpe J0P 1X0; Jean Castellon, 450-265-3675



Circuit Teleguide ST Roch, ST Roch De L' Achigan J0K 3H0; Gerald Beauchamp, 450-588-4254; email: info@gcrs.com; web: www.gcrs.com



Copetown Raceway, Copetown; Adam Filipowicz; email: adamfilip@home.com; web: copetown-raceway.8k.com



Dirt City RC, Albany, Oregon 97321; Doug Vertrees, (541) 791-1089; email: quicktemperr@aol.com



Dynamic Hobbies, Nepean K2E7S4; Fred Zufelt, (613) 225-9634



HobbyHobby P.L.R.C., Mississauga L5M 1K8; Tom Bakonyi, 905-858-7978; email: info@hobbyhobby.com; web: www.hobbyhobby.com



Honda House Motor Speedway, Chatham N7M 1P9; John Elliot, (519) 354-5530



Importations Louis Durand, Saint-Jean-Baptiste-de-Nicolet J3T 1E5; Louis Durand, (819) 293-6097; email: ldurand@sogetel.net; web: public.sogel.net/~ldurand/



KEY TO SYMBOLS

- | | | | |
|--|-----------|--|--------------------|
| | Indoor | | Concrete |
| | Outdoor | | Asphalt |
| | Off-road | | Minis & Micros |
| | On-road | | On-site hobby shop |
| | Oval | | AC power |
| | Dirt oval | | Auto lap counting |
| | Carpet | | Food available |

IROCC, Victoria V9B 5W9; Daryl Jones, (250) 478-8013; email: dbjones@shaw.ca; web: http://www.irocc.ca



Johns Jump & Grind R/C Track, Waterville BOP 1V0; John Egan, 902-538-8920; email: john.egan@ns.symbatico.ca; web: www.jjagrc.com



J-T International Raceway, Nananee K7R 8A1; N. O'Neill, (613) 354-0099



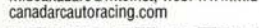
Kays Hobbies R/C Raceway, Moorefield N0G 2K0; Doug Kay, 519-638-9990; email: dougk@golden.net; web: www.kayshobbies.place.cc



Leading Edge R/C Speedway, Kingston K7M 3Y5; Mike and Tony Daicar, 613-389-4878



Mid-Canada R/C Auto Racing, Winnipeg R2J 4E6; Boyd Chwartacki, 204-444-4230; email: midcanadarc@mts.net; web: www.mid-canadarcautoracing.com



Miniatures & Passions, Ste. Therese J7E 2B4; Gilles Lachance, (450) 979-7989



Mini-Z Hobby Shop, Markham L3R 2Z4; Brian Pong, (905) 940-0898; email: info@minizhobbyshop.com; web: www.minizhobbyshop.com



Prince George Radio Controlled Car Club, Prince George V2M 5R9; Doug Waller, 250-561-0035



R/C Champ Raceway, Scarborough M1H 3A4; Ben, Matthew or Louie, (416) 289-8717; web: www.rcchamp.com



R/C Fanatic de la Capitale, Charlesbourg G1G 3Y4; Marc Page (Club President), 418-265-2678; email: infos@rcfanatic.com; web: www.rcfanatic.com



Recreation R/C Raceway, Prince George; Doug Waller, (604) 561-0035



Steeltown Speedway, Binbrook L0R 1C0; Trevor Harrison, 905-692-3407 (ask to; email: the_prodigy@zdnetwork.com; web: www.geocities.com/s_speedway



Sudbury Organized Auto Racing, Val Caron P3E 1E6; Brad Peacock, 705-897-1435 (Brad); email: soarsudbury1@hotmail.com; web: www.sudburyrc.no-ip.com



The All New R.C. World, Hamilton L0R 1W0; Dave, Larry or Brian, (905) 765-2301 or (9



Thompson Valley R/C Raceway, Kamloops V2E 2K7; Brent Wende, (250) 372-2917; email: tvrcrc@shaw.ca

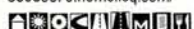


Vancouver R/C Road Racers, Coquitlam V3E 1K9; Roger Brown, (604) 945-3888

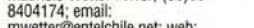


CHILE

Nico Prohens Off/On Roaders, Ovalle 1; Nicolas Prohens, (56) 53-711579; email: nprohens@entelchile.net; web: 38939070.home.icq.com/

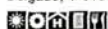


OFF/ON ROADERS, Santiago 1; Mauricio Wetter Ferrer, (56) 09-8404174; email: mwetter@entelchile.net; web: 38939070.home.icq.com/



COLOMBIA

Club De Automodelismo Colombiano, Sanatafe De Bogota D.C.; Jorge Delgado, 1-6130588



Garoso Raceway, Cucuta; Gabriel Rodriguez, 975-751892



COSTA RICA

Club de Automodelismo RC10 Costa Rica, San Jose; Osvaldo Averhoff A, (506) 2862353; email: nitrocr@hotmail.com



Hobbymania, Hispanidad San Pedro; Randall Jimenez, 506-280-9078; email: hobbymaniasore@hotmail.com; web: www.hobbymanias.com



CYPRUS

Racing Model Club, Nicosia; Andrea Sotiriou, 493186; fax: 493229



DENMARK

Brondby Motor Club, Brondby 2605; Soren Boy Holst, 45-36-472-462



Holstebro R/C Buggy Club, Holstebro 2600; Michael Brusholt, 45-97-412-734



Klub 144 Raceway, Lyngby 2800; Henrik Carstens, 45-42-88-3691



Rainbow Raceway, Copenhagen 2600; P. Christiansen, 45-52-848-504



Thor Miniace Odense, Odense N° 5240; Ulrich Rasmussen, 45-65-303-707



DOMINICAN REPUBLIC

Adoca R/C Speedway, Santo Domingo, (809) 220-5266



La Barranquita R/C International Speedway, Santiago, (809) 582-2303



ENGLAND

Chessington Radio Car Club, Worcester Park; Ian Spiller, 0252-20657



Hampshire Racing Center, Basingstoke; Tony Eudola, 44-1276-61402



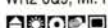
Hinckley RCCC, Hinckley; Bruce, 01455-890580



Snetterton Market Model Car Club, Norwich NR16 2JU; Lee Shore, 01760 724857; email: kekezza@fsmail.net; web: www.wheelspins.co.uk



Worcester Model Car Club, St. Johns WR2 6Q9; Mr. Hardy



FRANCE

Auto Electron, Limoges 87000; M. Boudoul, 55 062763



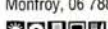
Auto Model Club de l'ouest, Lojherhet 29470; Peuzat Michel, 98071764



Crame Roncq, Mons el Baroeul; Michael Hondekyn, 33-20042755



CSRM, Lyon 69009; Pierre-Yves Monfroy, 06 78880852



Lorgies Bolides, Lorgies 62840; Houdequin Sabine



GERMANY

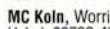
Dreykorn Raceway, Lauf 91207; Hermann Hensel, 09123-81457



MAC Zweibruecken, Hueffler 66909; Matthew Bailey, 011-49-6384-1388; email: matthew_w_bailey@hotmail.com; web: www.geocities.com/matthew_w_bailey



MC Koln, Worringen 50769; Ralf Habel, 02733-477493



Mini Car Club Dortmund, Dortmund 4600; Roland Schwan, 0231/213609



Oberhausen-Altstadt, Oberhausen 46099; Josef Holl, 0208-403676



Panik Raceway, Troisdorf 53844; Guido Kraft, 0224-400259



HONDURAS

Autodromo Accion, San Pedro Sula; Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061



HONG KONG

H.K.R.C. Model Car Racing Club, Hong Kong; Alex Chan, (852) 659-2822



Kingsville Buggy Arena, Shatin; Pak Yeung, (852) 607-0828



INDONESIA

Abadi Circuit, Bandung 40141; Adi Darmawan, 62-22-2021084; email: darmawaa@bdg.centrin.net.id



Ancol, Jakarta 14350; Andre Supriyana, 62 21 6506040; email: andre@cbn.net.id; web: www.auvis.com/ja



Jakarta International Twin Circuit, Dki Jaya; Fayakhun Andriadi, 6221-751243g; email: fayakhun@soon.com



Karinda Off-Road R/C Car Model Circuit, Jakarta-Selatan 12440; Wivlied W. Soedarmadi, 62-21-7900878

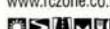


Pondok Cabe Circuit, J.L. Kunir No. 83, Jakarta; Ali Agus Salim, 7403568-9; fax: 74915



ISRAEL

IRCCA On-Road Raceway, Rishon Lezion 75650; Shachar Ken-Dror, +972-528-391875; email: dawn@dawn.co.il; web: www.rczone.co.il



Nahshoneat, Haifa 32809; Golan Levy, (972) 039386444 or (



ITALY

AF Models Rings, Collegno 10093; Adriano Forato, +39.011.406.00.08; email: racing@afmodels.com; web: www.afmodels.com

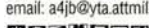


JAPAN

Xiwakuni R/C Track FPO AP 96310-0978; David T. Eck, 81-6117-53-3662



Yokota R/C Racers, APO 96326-0034; John Baker, 90-001-81-31175-7-64; email: a4jb@yta.attmil.ne.jp



KUWAIT

Inferno DX 4WD Track, Ahadi 61002; Yousuf Acqatari



LEBANON

Wild Willy RCC, Beirut, 00961-4-403751



MALAYSIA

Acme Speedway, Georgetown, Penang 10000; Moey Chee Cheong, 604-2613175 & 6012-4; email: s_jamm@hotmail.com



Jump Square Arena, Selanhor; Thomson Chong, (603) 656-2513



Niko Sales & Service Centre, Johor Bahru; Niko Cheng, (607) 234-3615; email: niko3@pd.jaring.my; web: www.niko.com.my



Titwangsa Raceway, Kuala Lumpur; R.A.C.E. Sdn Bhd., 03-2614496



TP Racing R/C Raceway, Selangor; WONG SOO WEI, +603 56388160; email: wong@tp-racing.com



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Alces Off Road, Ensenada 22830; Jorge Bustamante, 667-6-1476, 61477, 8



Baja JR, Guadalajara 45000; Memo. Pancho, 33-3671-5432/33-3832; email: baja_jr@hotmail.com



Club Dinamo Monterrey, Monterrey 64890; Daniel Ornelas Elizondo, +52 (818) 3574588; email: daniel26or@hotmail.com



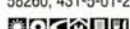
Club Kyosho Mexico, Mexico 04330; Fernando Lopez, 52 55 58462350; email: Omega@avantel.net; web: www.kyoshomexico.com



Desestreza Racing Club, Aguascalientes; Luis Lopez, 44 98 961296; email: luis_lopez@jabil.com



Hobby Modelis Raceway, Morelia 58260, 431-5-01-22



La Hielera, Queretaro 76160; Jorge Morelos Rabell, 42-12-15-25



Micromotori Club, Jalisco 44640; Francisco Sotomayor, 3335875739; email: fstmyr@hotmail.com



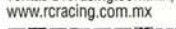
Nitro Racers, san jose del cabo / los cabos; Franco Meza, (114) 1424422; email: tcstafe@prodigy.net.mx



R/C Racing Hobbies de Mexico, Guadalajara 45129; Marcelo Garciae, (5233) 3587-5739; email: ventas@rcracing.com.mx; web: www.rcracing.com.mx



Radio Control Racing San Luis, San Luis Potosi 78217; Alvaro Obregon F, 011 52 444 825 328; email: fosa-do1@prodigy.net.mx

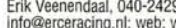


NETHERLANDS

ERCE Eindhoven, 5624 AA Eindhoven; Erik Veenendaal, 040-2429910; email: info@erceracing.nl; web: www.erceracing.nl



H.F.C.C. Hollandia, The Hague; G. de Jong, 031-070-3679820



M.A.C. Vlymen, Nieuwkuijk; Arjan van de Graaf, 31-416-376298



R.C.T.D. Circuit, Dordrecht 3316 GN; Jan van Kooy, 31-78-618-11-84; email: pkracing@bit.nl; web: www.pkracing.nl



NEW ZEALAND

Capital Model Racers, Lower Hutt; Roger Whitmarsh, 04-566-5714



Counties R/C Raceway, Pukekohe; R. Northcott, 09-23-86904 or 025 9; email: ross_jam@xtra.co.nz



Harewood Radio Control Car Club, Christ Church; Dean Johnson, 09-0-3880 344



Papakura Indoor R/C Car Club, Auckland; Colin Perry, 09-298-4711



Western District R/C Off-Road Car Club, Auckland; Chris, 09-838-5201



NORWAY

Aurskog R/C Club, Aurskog; Tommy Geleseth, 47-63-86-21-61



Dalen Raceway, Molde; Johnny Reitan, 94 64 52 95



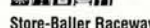
Hadeland Raceway, Gran; Dag Bakke-Nilssen, 61330405



Lorenskog RC Bane, 1475 Finstadjordet; John-Harald Nymoen; email: post@lmbk.no; web: www.lmbk.no

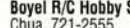


Store-Baller Raceway, 3/17/99 61330225; Ola Raastad

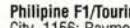


PHILIPPINES

Boyet R/C Hobby Shop, Rizal; Jose Chua, 721-2555



Philippine F1/Touring Club, Quezon City 1156; Raymond Aguilar/Ron Villalor, 896-64-15/23-30-08



Heidelberg Radio Control Car Club, Somerset West; Andre Hollander, 024-51-2865



Lowveld Radio Control Thunderdrome, Nelspruit; Martin Van Der Merwe, 01311-534-6415



MERC Racing, Rustenburg 0300; Gerrie Pretorius, 014-5974569



Normek Raceway Club, Gauteng; Dan de Agrella, 2711-972-7011; email: craig@mvweb.co.za



Parow Radio Car Club, Parow; Stirling Spengler, 021-945-4957



Parow Radio Control Car Club, Parow 7530; Craig, +27 21 919-5859; email: craig@kingsley.co.za; web: www.speedmodels.za.org



Phoenix Raceway, Stilfontein; Lionel Edwards, 018-4842863



Pick ini Pay Model Car Club, Klerksdorp 2570; H. Grobbs, (27) 18 46245421



Pietersburg Model Racing, Pietersburg; Peter Van Vuuren, 0152-293-0700



Pretoria Model Racers, Pretoria; Deon Cerf, 27-083-630-2045; web: www.pretoriamr.co.za



Pretoria Off Road R/C Club, Pretoria; Gert Swart, 012- 377-3238



R.A.C.E. Off Road, Maraisburg; Derrick Plank, 682-2173



R.C. Superbowl, Elsburg; Karl Fawcett, 27119076145



Rustenburg Off-Roaders, Rustenburg; Jan Van Vollenhoven, 0142- 24-846



SPAIN

A.D. Diabliños, Zaragoza; Carlos Vicente de Vera, 34-76-605350



ADAM, Madrid; Alvaro Sarabia, 01-7471113



Club Modelismo Catilla, Burgos 09080; A.J. Pereda, 34-47-240130



Club Social Sevillana, Granada; Oscar Saenz, 958-275282



CRAEM, Madrid; Pablo Llorente, 91-3865952



Motoclub Castellón R.C., Castellón; Octavio Traver, (34) 64 229705, (34)



Outlaw-Ultima II, Madrid 28016; Juan Vacas, 915197298



SWEDEN

Amalie Racetrack, Sollenbrunn 5-46632; Tage Johansson



PROCAR Speedway, Veddige 430 20; Lars Nordin, 46-0-340-38784; fax: email: info@procar.se; web: www.procar.se



Sollenbrunn Miniracing Club, Alingsås; Tage Johansson, 46-322-40944; email: tage.j@swipnet.se



Staffanstorps Highway 1:8 Track, Staffanstorps 245 45; Birje Petersson, 46 0 46-256832



torvinge raceway, rappestad 59047 vikingstad; mats johansson, 013-808445; email: mats.j@swipnet.se; web: drive.to/miraci



Touring 1:10 Raceway (& Mini-Z Raceway), Ronneby 372 35; Mikael Nilsson, +046 457 160 07; email: mickel12@telia.com; web: drive.to/rcck



SWITZERLAND

E.M.B.C.M. Raceway, Seinen CH-8854; Markus Schmid, 41-1- 8605229



ERMC Raceway, Grand-Saconnex 1218; M. Maurer, 19-41-22-798-9765



JMRCV-Terraindu Levant, Geneva 1290, fax 19 41 22 7790805



THAILAND

Hobbica Circuit, Plong Maduea, Maung 73000; Mr. Supakiet Thuvachardenpanich, 66-34-258808; email: hobbica@yahoo.com



Hot Rod Raceway, Bangkok 10310; Mr. Vichai Vongphate, (662) 8602922-5



TURKEY

B&B OTO G ven Raceway, Istanbul, 0216-4186118, or 021



Baskent Otopark Raceway, Istanbul 81190; Kaan Ciftci, +90 (216) 3486332; email: taneri@superonline.com



VENEZUELA

R/C Mariche, Caracas DF 1070-A; Bruno Morganti, 58-02-241-3969 or 24



WEST INDIES

Island Raceway, St. Andrew; Rodney Littau, (809) 926-7034 or 92



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Track Name

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Check all that apply

- ☐ Indoor
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- ☐ Off-road
- ☐ On-road
- ☐ Oval

- ☐ Dirt
- ☐ Carpet
- ☐ Concrete
- ☐ Asphalt
- ☐ Minis & Micros

- ☐ On-site hobby shop
- ☐ AC power
- ☐ Automatic lap-counting
- ☐ Food available

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KEY TO SYMBOLS

- | | |
|-----------|--------------------|
| Indoor | Concrete |
| Outdoor | Asphalt |
| Off-road | Minis & Micros |
| On-road | On-site hobby shop |
| Oval | AC power |
| Dirt oval | Auto lap counting |
| Carpet | Food available |

Ace Hardware Hobbies 177 acehardwarehobbies.com	First Hobby 218 firsthobby.com	Model Rectifier Corp. (MRC) 17 modelrectifier.com	RC Hub 209 rchub.com	TNT Mods 218 tntmods.com
Ace Hobby Distributors Inc. 19, 59 acehobby.com	FMA Direct 204 fmadirect.com	N-Ternational Nitro 202 nternationalnitro.com	RC Solutions 217 rc-solutions.com	Tower Hobbies 188-193, 230 towerhobbies.com
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AirBorne Models 196 airborne-models.com	General Silicones Group 32, 75 gsracing.com	Nomadio 117 nomadio.net	R/C Dirt Action 220 rcDirtaction.com	Vantage Racing 34 vantageracing.com
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TRACK DAY WITH HPI



HPI flew in professional driver and Super Taikyu Racing Series champion Kaz Koizumi to drive at the Willow Springs Raceway. Kaz made it look easy as he dissected the tight, technical roadcourse.

I've often dreamed about driving a full-scale racecar flat out around a world-class racetrack, and I'm sure that you have, too. HPI made my dream come true—well, almost. HPI sponsors a full-scale Subaru Impreza WRX that's raced in Japan at Twin Ring Motegi, Suzuka and the 24-hour race at Tokachi Speedway. HPI arranged to have this car shipped to the U.S. and invited a few guests for a track day at the Willow Springs Raceway in Rosamond, CA. HPI imported professional race driver Kazuhiro "Kaz" Koizumi to put on an exhibition of speed and control at the Streets of Willow track and contracted professional driver/instructor Danny McKeever from Fast Lane Driving School to give the guests an adrenaline-pumping ride around the course.



I'm strapped in and ready to go beside professional driver and instructor Danny McKeever.



A big "thank you" to the staff from HPI who generously hosted this event. I'll never forget my experience at the Streets of Willow.

IN THE PASSENGER SEAT

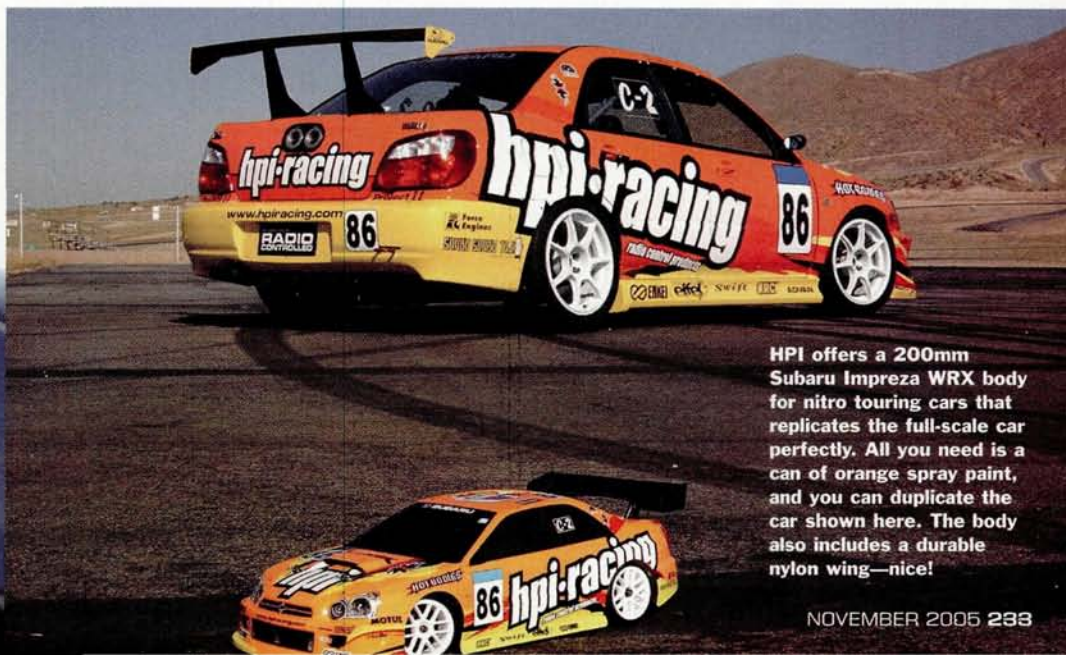
I didn't actually drive the Subaru, but I got the next best thing—the passenger seat on the left side of the vehicle. In Japan, cars drive on the left side of the street and drivers sit on the right side of their cars, so sitting on the left made me feel as though I was in the hot seat. Unfortunately, my imaginary brakes didn't work at all!

Before I could tighten my chin strap, McKeever lit up the tires and entered the track. The first corner approached rapidly, and I kept waiting for McKeever to hit the brakes, but he hesitated until the last possible moment before clamp-

ing the giant Brembo brake rotors. The brakes screeched and the tires squealed, but the Subaru hung on to the corner as if it were glued to the surface. The G-force was so strong in the corners that I actually hit my head on the roll bar a couple of times—fortunately, I was wearing a helmet.

McKeever drove within millimeters of the cones and corner markers and kept the car on the fast line the entire time. The sound of the 300-plus-horsepower Boxer engine as it up-shifted on the straightaway and down-shifted in the corners was music to my ears, and I couldn't get over how effective the brake system was on this car. That ride in the HPI Subaru was an exhilarating experience I'll remember for the rest of my life.

Kaz takes an HPI Nitro RS4 RTR 3 for a test drive. This guy can drive anything!



HPI offers a 200mm Subaru Impreza WRX body for nitro touring cars that replicates the full-scale car perfectly. All you need is a can of orange spray paint, and you can duplicate the car shown here. The body also includes a durable nylon wing—nice!